

Active Archive Appliance (A3)

Racking and Installation Guide

v6.5

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About This Guide

Purpose

The *Active Archive Appliance (A3) Racking and Installation Guide* explains how to install the Archive Engine, Media Library, and Cache Expansion Array in a rack.

Audience

This guide is intended for professional system integrators and PC technicians. Installation and maintenance should be performed by experienced technicians only.

Related Documents

The following documents provide additional information about PowerFile products:

- A3 Administrator's Guide
- A3 Field Replaceable Unit Guide
- A3 Release Notes
- A3 Tips and Practices Guide
- A3 Touchless DR™ Administrator's Guide

1

Introduction

In This Chapter

- [Archive Engine \(Generation 1\)](#)
- [Archive Engine \(Generation 2\)](#)
- [Media Library \(Generation 2 or Generation 3\)](#)

The A3 system consists of the Archive Engine and one or more Media Libraries. The two hardware components of your A3 system function best when they are mounted in standard IT racks. This chapter provides an overview of the A3 system shipping components and safety precautions.

A3 System Shipping Components

Archive Engine (Generation 1)

- PowerFile Archive Engine
- Accessory box containing:
 - 2 Outer Rails (Left and Right)
 - 2 Inner Rails (Left and Right) (Packed with Outer Rails)
 - 10 M3x4 Button Head Screws
 - 2 ATX Chassis Latches and Screws
 - 1 Allen Wrench
 - 8 M5x12 Flat Head Screws
 - 8 ATX Rail Slide Washers (Square Holes)
 - 8 ATX Rail Slide Washers (Round Holes)

- 8 M5x12 Pinhead Screws
- 8 Lock Washers
- 1 Torx Screwdriver
- 2 Power Cords
- 1 Front Bezel
- User Documentation

Archive Engine (Generation 2)

- PowerFile Archive Engine
- Accessory box containing:
 - 2 Inner Rails Pre-attached to Server (Left and Right)
 - 2 Inner Rail Extensions
 - 4 M5x10 Phillips Pan Head Screws
 - 2 M5x24 Phillips Pan Head Screws
 - 4 M3x6 Phillips Flat Head Screws
 - 8 M5x16 Phillips Flat Head Screws
 - 10 M5 Cage Nuts
 - 8 Washers
 - 2 Power Cords
 - 1 Front Bezel
 - User Documentation
- Foam packing containing:
 - 2 Outer Rails (Left and Right)
 - 2 Outer Rail Extensions

Media Library (Generation 2 or Generation 3)

- PowerFile Media Library
- Rail Kit box containing:
 - 2 Outer Rails (Left and Right)
 - 2 Inner Rails (Left and Right) packed in Outer Rails
- Accessory box containing:
 - Registration Card
 - Product Information Brochure
 - Warranty Card
 - 1 1394 FireWire Cable
 - 1 Power Cord
 - 2 Qualification Media Discs (Generation 3 only)

Note: *Do not open the Media Library unit. There are no user-serviceable parts inside the unit. For service questions, please contact PowerFile Technical Support.*

WARNING: Opening the cover of the Media Library unit may expose you to visible and invisible laser radiation. Avoid direct exposure to laser beam.

Rack System Precautions

The following safety requirements must be considered when the unit is mounted in a rack.

- The rack design should incorporate stabilizing features suitable to prevent the rack from tipping or being pushed over during installation or in normal use.
- When loading a rack with the units, fill the rack from the bottom up and empty from the top down.
- The maximum operating ambient temperature for the unit is 35°C (94° F). The rack design should take this into consideration.
- The system must be operated with low pressure rear exhaust installation (back pressure created by rack doors and obstacles not to exceed 5 pascals [0.5mm water gauge]).

Electrical Distribution System Precautions

- The rack should have a safe electrical distribution system. It must provide overcurrent protection for the unit and must not be overloaded by the total number of units installed in the rack. Consideration of the electrical power consumption rating shown on the nameplate should be used when addressing these concerns.
- The electrical distribution system must provide reliable grounding for each unit in the rack.
- Each power supply in each unit has an earth leakage current of 1.8mA. The design of the electrical distribution system must take into consideration the total earth leakage current from all the power supplies in all the units.
- For full compliance, the rack should be labeled “HIGH LEAKAGE CURRENT. Earth connection essential before connecting supply”.
- The fully loaded and configured rack must meet the UL 60950-1 and IEC 60950-1 safety requirements.
- This equipment is intended to operate with two working PSUs installed in the Power Supply Module. Before removal/replacement disconnect all supply for complete isolation.
- A faulty Power Supply unit must be replaced with a fully operational unit within 24 hours.
- There are two power supplies in the Archive Engine. It is important to connect both power supplies. It is recommended that each of the power supplies be attached to a separate UPS with built in surge protection and line conditioning.

WARNING: DO NOT use a UPS (Universal Power Supply) with automatic shutdown or so called *smart* features. The PowerFile system *does not support* these features. Use a simple UPS to protect your system from power blackouts and “brownouts.”

2

Preparing for Installation

In This Chapter

- [Unpacking the A3 System](#)
- [Preparing for Setup](#)
- [Choosing a Setup Location](#)
- [Rack Mounting Considerations](#)

This chapter provides information about how to prepare for installing the A3 system.

Unpacking the A3 System

Unpack the Archive Engine and Media Library shipping boxes. Ensure that you have all required components. Refer to [“A3 System Shipping Components” on page 1](#) for the shipping inventory list.

Decide on a suitable location for the rack unit that will hold your equipment. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet. Be sure to read the Rack and Server Precautions in the previous chapter.

Preparing for Setup

The box your chassis was shipped in should include two sets of rail assemblies, two rail mounting brackets and the mounting screws you will need to install the system into the rack. Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

Choosing a Setup Location

- Leave enough clearance in front of the rack to enable you to open the front door completely (~25 inches).
- Leave approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.
- This product is for installation only in a Restricted Access Location (dedicated equipment rooms, service closets and the like).

Rack Mounting Considerations

Ambient Operating Temperature

If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the ambient temperature of the room. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature.

Reduced Airflow

Equipment should be mounted into a rack so that the amount of airflow required for safe operation is not compromised.

Mechanical Loading

Equipment should be mounted into a rack so that a hazardous condition does not arise due to uneven mechanical loading.

Circuit Overloading

Consideration should be given to the connection of the equipment to the power supply circuitry and the effect that any possible overloading of circuits might have on overcurrent protection and power supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

Reliable Ground

A reliable ground must be maintained at all times. To ensure this, the rack itself should be grounded. Particular attention should be given to power supply connections other than the direct connections to the branch circuit (i.e. the use of power strips, etc.).

3

Installing the Archive Engine

In This Chapter

- [Determining the Archive Engine Model](#)
- [Installing the Archive Engine \(Generation 1\)](#)
- [Installing the Archive Engine \(Generation 2\)](#)

This chapter provides instructions for installing the Archive Engine, Generation 1 and Generation 2.

Note: *The following installation procedures apply to standard Electronics Industries Association (EIA) racks. Non-EIA racks may not be able to support the Archive Engine. If you are using a non-EIA rack, PowerFile recommends that you secure the Archive Engine using slide rails, which are available from PowerFile Authorized Resellers.*

Determining the Archive Engine Model

The Archive Engine server is provided in two models: Generation 1 and Generation 2. Depending on which model you have, the rack mounting and installation procedures will differ.

To determine the Archive Engine model, check the serial number of the server. The serial number can be found on a label located near the lower left corner on the top of the server.

- Generation 1 servers have a serial number that starts with **S** and has a total of 15 characters. Go to [“Installing the Archive Engine \(Generation 1\)” on page 3–8](#) for installation instructions.
- Generation 2 servers have a serial number that starts with **K** and has a total of 11 characters. Go to [“Installing the Archive Engine \(Generation 2\)” on page 3–15](#) for installation instructions.

Installing the Archive Engine (Generation 1)

The rails are shipped together, with the inner rail located inside the outer rail. You'll need to separate the two rails and then attach the inner rails and latches to the Archive Engine prior to mounting the device into the rack. The rails are attached with the screws provided in the shipping box.

The rack must be assembled with the left and right chassis components correctly oriented. In this assembly, the "left" and "right" correspond to the left and right sides of a person facing the rack assembly.

The rail assembly is designed to prevent the Archive Engine from being removed completely; however, the rack will allow access to the fan tray. If the device must be completely removed, you must rotate the right side chassis latch up and the left side chassis latch down. You will then be able to remove the device.

Identifying the Rail Kit Hardware

Before getting started with installation, review the illustrations in this section and identify the rail kit parts that are required for assembly. [Table 3-1](#) identifies the rail kit hardware for the Archive Engine (Generation 1).

Note: An Allen wrench and Torx screwdriver are provided for installation; however, you will need to provide a Phillips head screwdriver.

Table 3-1 Archive Engine (Generation 1) Rail Kit Hardware



Hardware	Name	Quantity	Use
	M3x4 Button Head Screw	10	Mounting inner rails to Archive Engine chassis
	ATX Chassis Latch and Screws	2	Mounted to inner rail to restrict chassis withdrawal

Table 3-1 Archive Engine (Generation 1) Rail Kit Hardware (Continued)








Hardware	Name	Quantity	Use
	Allen Wrench	1	Attaching the chassis latches to the inner rail.
	M5x12 Flathead Screw	8	Securing outer rails into rack (front and rear). Use with ATX rail slide washers.
	ATX Rail Slide Washer (Square Hole)	8	Securing outer rails in a square hole rack.
	ATX Rail Slide Washer (Round Hole)	8	Securing outer rails in a round hole rack.
	M5x12 Pinhead Screw	8	Securing outer rails in a tapped hole rack. (For Tapped Hole Racks).

Table 3-1 Archive Engine (Generation 1) Rail Kit Hardware (Continued)

Hardware	Name	Quantity	Use
	Lock Washers	8	Securing outer rails in a tapped hole rack with M5x12 Pinhead Screw. (For Tapped Hole Racks).
	Torx Screwdriver	1	Locking drives in Archive Engine chassis.

Attaching the Inner Rail to the Chassis and the Outer Rails to the Rack

This section explains how to attach the inner rails to the chassis and the outer rails to the rack. Refer to [Table 3-2](#) for a list of components required for assembly.

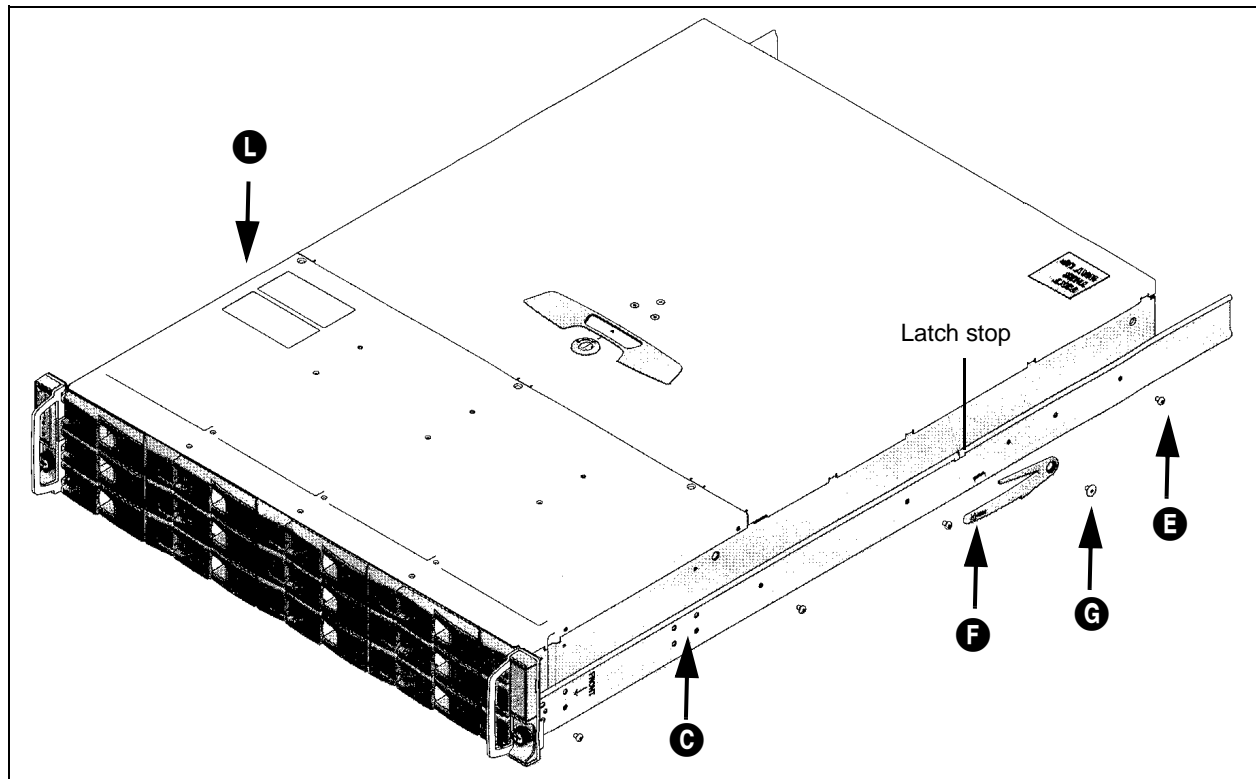
Table 3-2 Rail Kit Parts

Item	Description
A	M5 Spring Washer
B	Rack Slide Washer Square Hole
C	Chassis Slide
D	Rack Slide Washer Round Hole
E	M3 Buttonhead Oxide Patchlock
F	Chassis Latch
G	Screw Chassis Latch
H	M5 x 12 CSK Phillips Patchlock
I	Screw 10-32 UNF Special Phillips
J	Rack Bracket Assembly Universal
K	10mm Spanner
L	Serial Number

To attach the inner rails:

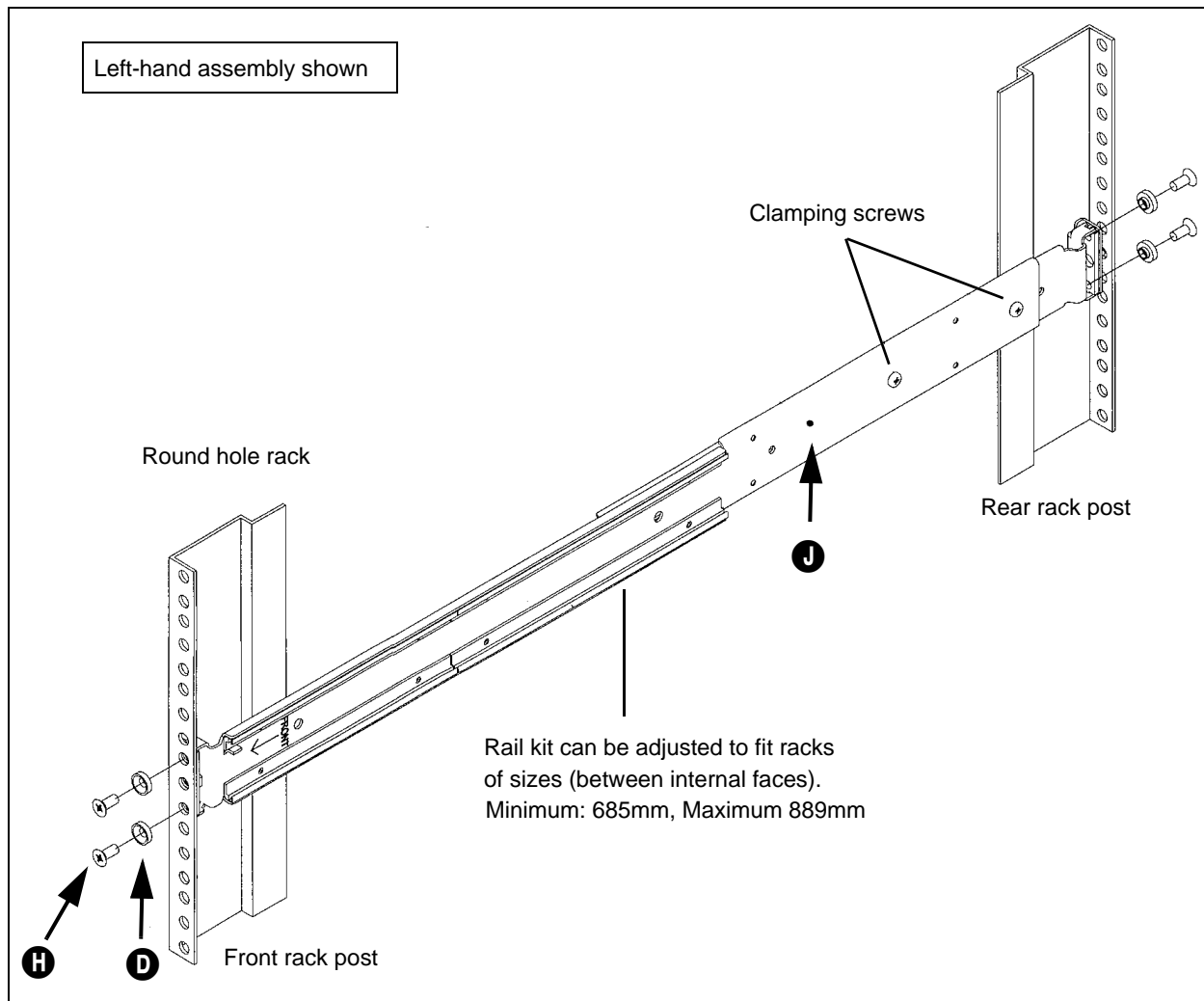
1. Attach **C** to the left and right side of the chassis using screws **E** with the Allen wrench. Repeat this step on the other side of the chassis.

The inner rail is attached by four screws on each side. Note their relative positions in the diagram.



Archive Engine (Generation 1)

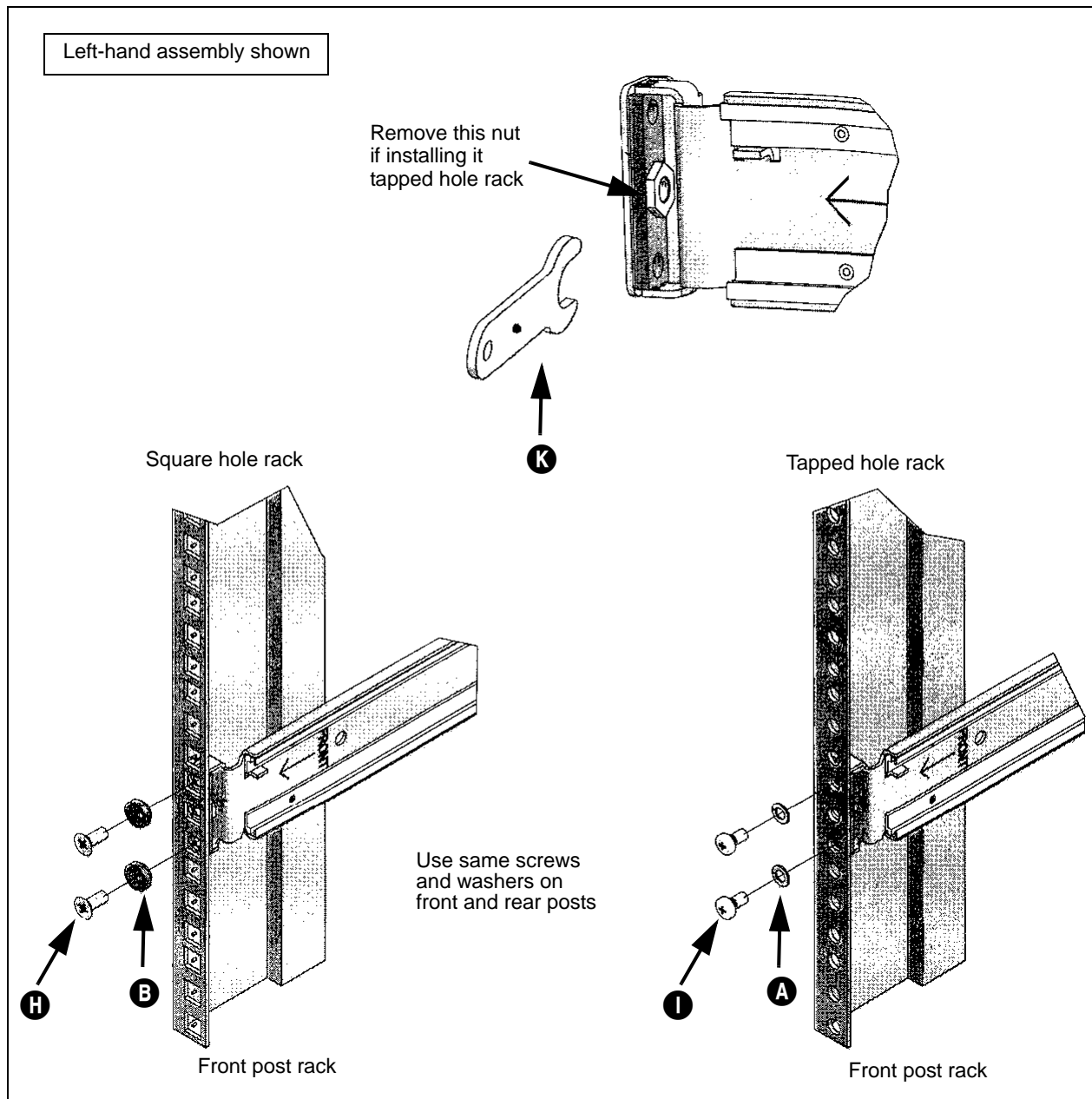
2. Attach **F** to the left and right slides using screws **G**. Ensure the latch **F** is oriented with its spring arm located against its stop. (At top on right-hand side and at bottom on left-hand side). Repeat this step on the other side of the chassis.



Archive Engine Rail Assembly (Generation 1)

3. (Perform this step only if installing into a tapped hole rack) Remove the nut as shown using supplied spanner **K**.

Note: This step starts the instructions for installing the outer rails.



Archive Engine Rail Assembly Close Up (Generation 1)

4. Find the location pin at the rear end of the rail and use the Allen wrench to tighten it into the rear rack post. Extend the rail to fit between the front and rear rack posts. Make sure that the front and rear mount points are at the exact same height.
5. Secure the outer rails to the rack from the front and rear using the screws and washers provided. Repeat this step on the other side of the chassis.
 - For square hole racks, use the M5x12 flathead screw in combination with the ATX rail slide washer (square hole). These are items **H** and **B**.
 - For round hole racks, use the M5x12 flathead screw in combination with the ATX rail slide washer (round hole). These are items **H** and **D**.
 - For tapped hole racks, use the M5x12 pinhead screw in combination with the lock washers. These are items **I** and **A**.

Note: *Screws should be left loose enough to allow rail sideways movement on its slots.*

6. Tighten the clamping screws.

Mounting the Archive Engine in the Rack

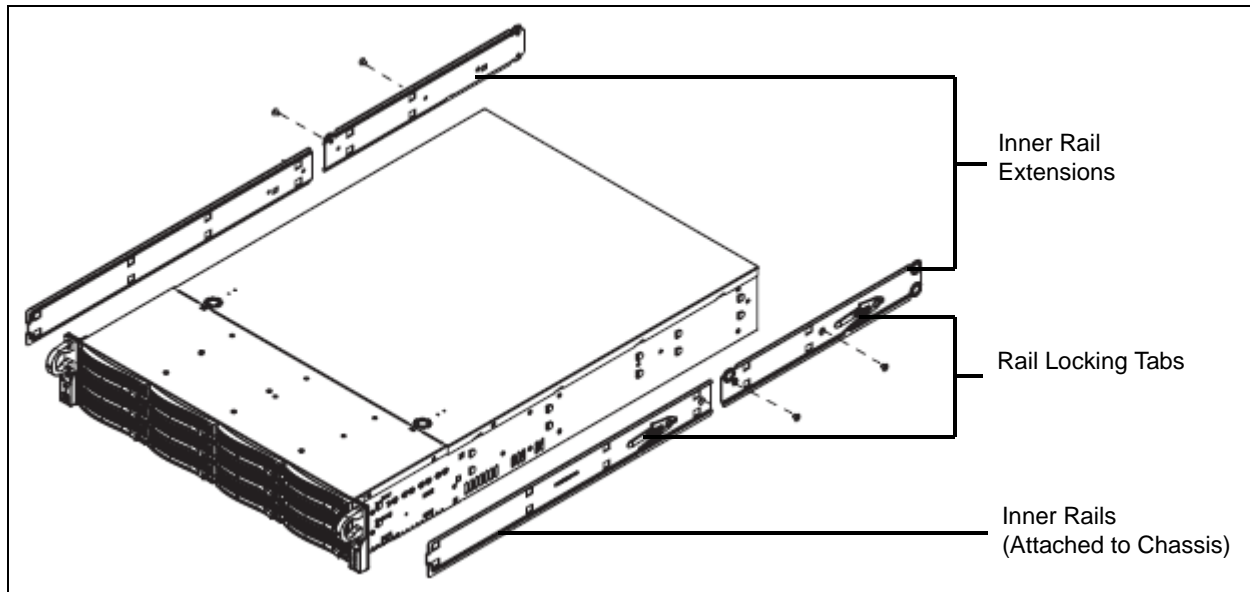
After the outer rails are secured in the rack, the Archive Engine can be inserted into the rack.

To mount the Archive Engine:

1. Lift the Archive Engine and align it with the rack rails.
2. Carefully insert the Archive Engine slides into the rack rails and push until it is fully inserted.
3. Using the captive screws on the front of the Archive Engine, secure the server to the rack.
4. (Optional) PowerFile recommends that you unlatch and reseal the hard disk drives before powering on the Archive Engine. Use the provided torx screwdriver to unlock and lock the drives.
5. Attach the front bezel to the Archive Engine.

Installing the Archive Engine (Generation 2)

The Archive Engine package includes two rack rail assemblies in the rack mounting kit. Each assembly consists of an inner fixed chassis rail that secures directly to the server chassis, inner rail extensions, and an outer slide rack rail that secures directly to the rack itself.





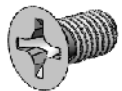
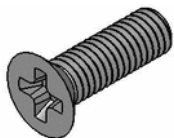

Archive Engine (Generation 2)

Both chassis rails have a locking tab. The tabs lock the server into place when installed and pushed fully into the rack. These tabs also lock the server in place when fully extended from the rack. This prevents the server from coming completely out of the rack when you pull it out for servicing.

Identifying the Rail Kit Components

Table 3-3 identifies the rail kit hardware for the Archive Engine (Generation 2).

Table 3-3 Archive Engine (Generation 2) Rail Kit Hardware

Hardware	Name	Quantity	Use
	M5x10 Phillips Pan Head Screw	4	Attach the extension bracket to the short bracket
	M5x24 Phillips Pan Head Screw	2	Hold the server in the rack.
	M3x6 Phillips Flat Head Screw	4	Secure the inner rail extension to the Archive Engine.
	M5x16 Phillips Flat Head Screw	8	Secure the brackets to the front side of the rack.
	M5 Cage Nut	10	Attach server to rack using screws and cage nuts, as needed.

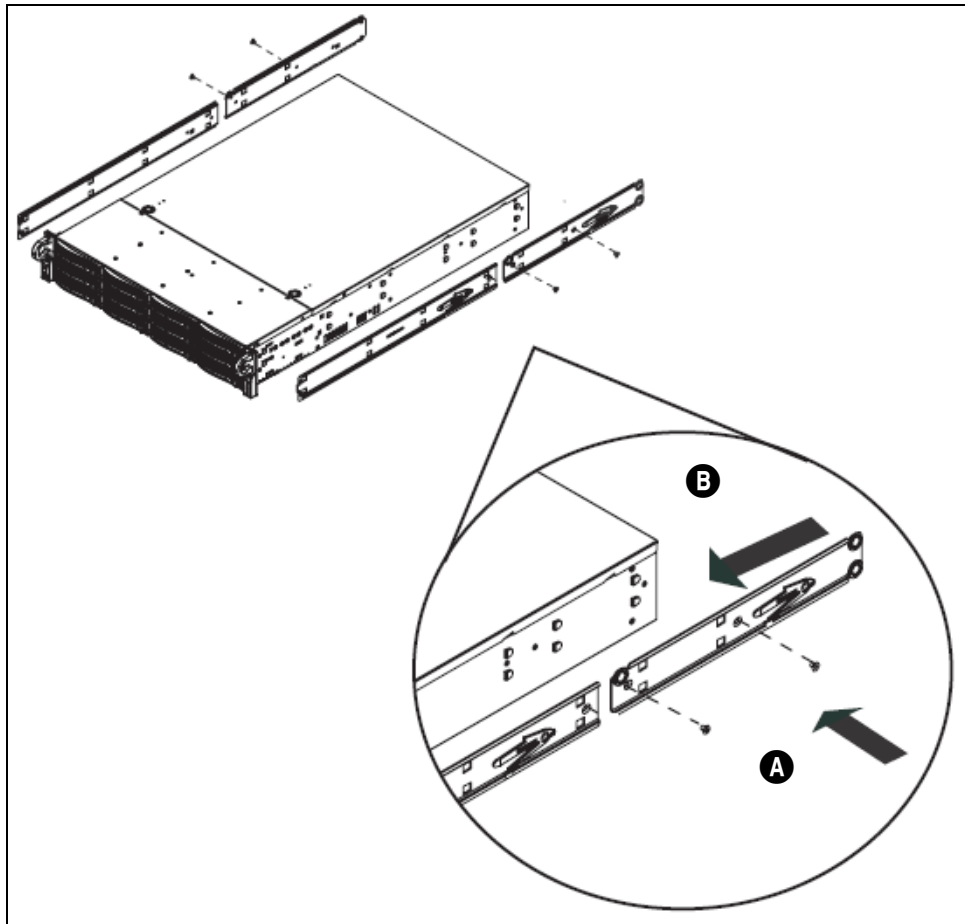
Attaching the Inner Rail Extensions

If you are installing the Archive Engine in a server rack, attach the inner rail extensions to stabilize the chassis within the rack. The first section of the inner rails are pre-attached and nothing needs to be done to them.

If you are not using a rack, you do not have to install the inner rail extensions. The pre-attached section of the inner rail will not interfere with normal use of the chassis.

To attach the inner rail extensions:

1. Place the inner rail extensions **A** on the side of the Archive Engine aligning the hooks of the chassis with the rail extension holes. Make sure the extension faces “outward” just like the pre-attached inner rail.



Archive Engine (Generation 2) Inner Rail Assembly Detail

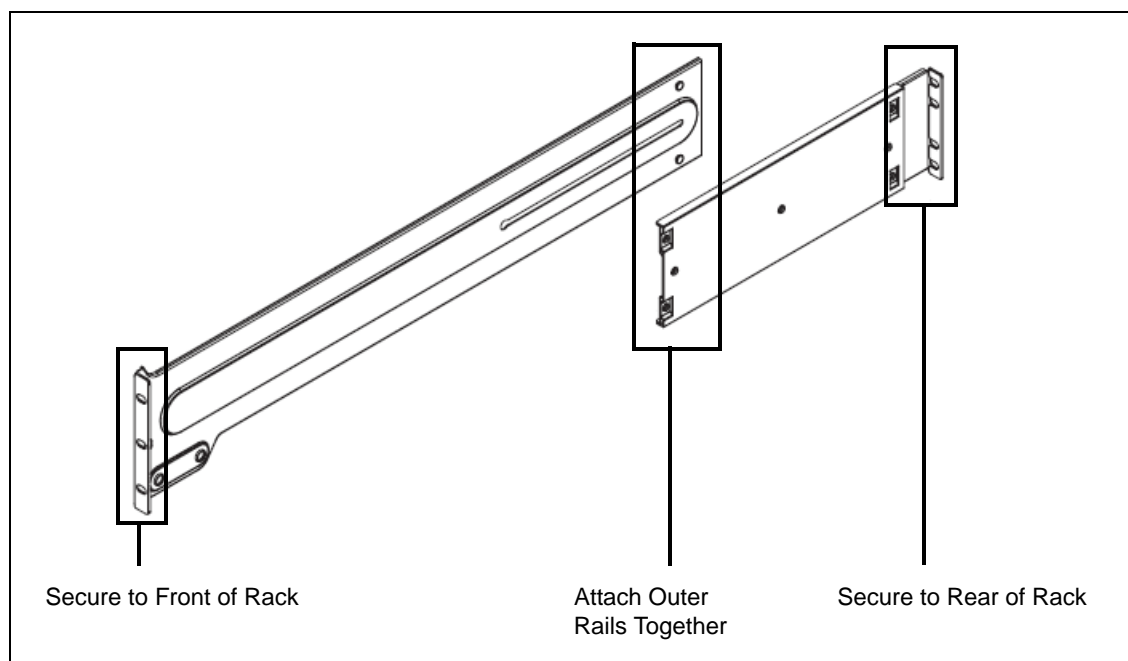
2. Slide the inner rail extension toward the front of the Archive Engine **B**.
3. Secure the inner rail extension to the Archive Engine with two of the M3x6 screws, as illustrated.
4. Repeat steps for the other rail extension.

Attaching the Outer Rails

The outer rails attach to the server rack and hold the server in place. The outer rails for the Archive Engine extend between 32 inches and 34 inches (or up to 40 inches with the extension).

To attach the outer rails:

1. Assemble the outer rail by attaching the short section of the rail to the outside of the long section of the rail. You must align the pins with the slides. Also, both bracket ends must face the same direction.
2. Adjust both the short and long brackets to the proper distance so that the rail fits snugly into the rack.
3. Secure the long bracket side of the rail to the front side of the rack with two of the M5x16 screws and the provided washers.
4. Secure the short bracket side of the rail to the rear side of the rack with two of the M5x16 screws and the provided washers.
5. Repeat steps for the other outer rail.



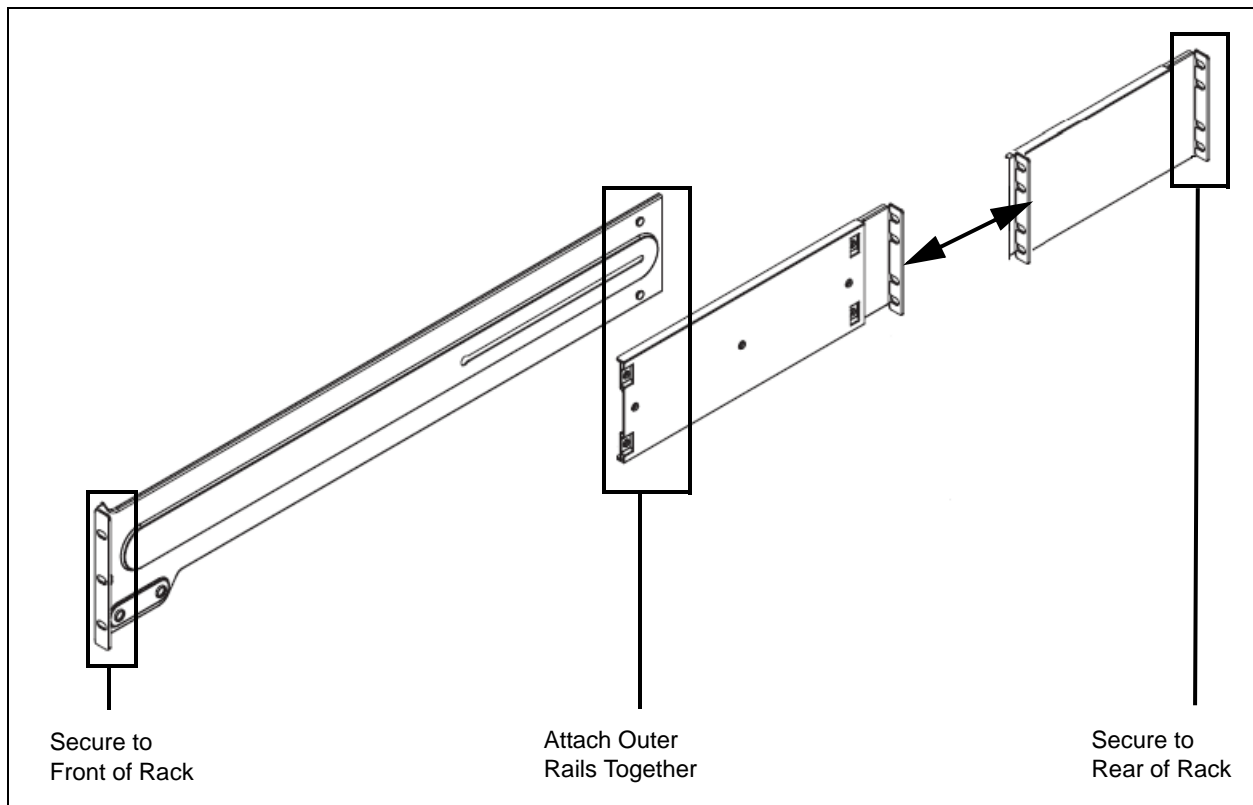
Archive Engine (Generation 2) Outer Rail Assembly Detail

Attaching the Extension Brackets

If you have an extended depth rack, extension brackets can be added to the end of the rails to increase the length of the outer rails by 6 inches up to 40 inches.

To attach the extension brackets to the rack:

1. Assemble the outer rail by attaching the short section of the outer rail to the outside of the long section of the outer rail. You must align the pins with the slides. Ensure that the bracket ends face the same direction.
2. Attach the extension bracket to the short section of the outer rail with two of the M5x10 screws. The extension bracket has threaded holes, so no nuts are needed. Ensure that the bracket ends face the same direction.



Archive Engine (Generation 2) Extension Bracket

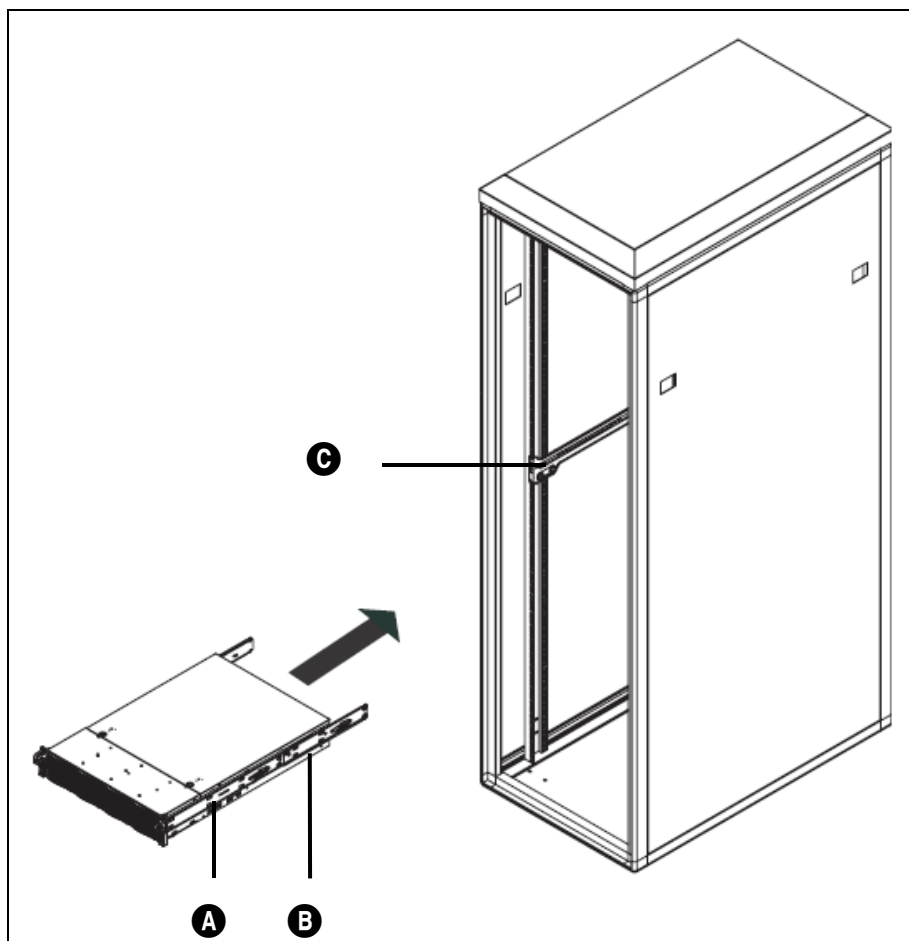
3. Adjust the rail to the proper length so the rail fits securely into the rack.
4. Secure the long bracket side of the rail to the front side of the rack with two of the M5x16 screws and the provided washers.

5. Secure the extension bracket to the rear side of the rack with two of the M5x10 screws and the provided washers. The extension bracket has threaded holes, so no nuts are needed.
6. Repeat steps for the other extension bracket.

Mounting the Archive Engine in the Rack

To mount the Archive Engine in the rack:

1. Confirm that the Archive Engine has the inner rails **A** and rail extensions **B** attached. Also, confirm that the outer rails **C** are installed on the rack.



Archive Engine Rack Assembly

2. Line chassis rails **A** and **B** with the front of the rack rails **C**.
3. Slide the Archive Engine rails into the rack rails, keeping the pressure even on both sides (you may have to depress the locking tabs when inserting). When the server has been pushed completely into the rack, you should hear the locking tabs “click”.

4. (Optional) Insert the two M5x24 screws on either side of the server, and then tighten to hold the server in the rack.
5. (Optional) If the drives were shipped in the Archive Engine, PowerFile recommends that you unlatch and reseal the drives before powering on the server. When performing this step, ensure that you do not replace the drives in the wrong slots. That is, make sure you replace the drives back in their original slots; don't swap the drives around.
6. Attach the front bezel to the chassis.

4

Installing the Media Library in a Front-mount Configuration

In This Chapter

- [Front-mount Configuration](#)
- [Getting Started](#)
- [Setting Up the Front-mounted Chassis](#)
- [Installing the Inner Slide Rails on the Front Mounted Chassis](#)
- [Installing the Outer Rails on the Front-mounted Chassis](#)
- [Installing the Chassis in the Rack](#)
- [Attaching the Media Library Feet](#)

This chapter explains how to mount and install the Media Library in a front-facing configuration in the rack.

Front-mount Configuration

An A3 front-mount configuration supports eight front-facing Media Libraries and one Archive Engine in a standard 42U rack.

Note: Information in this chapter applies to both the Media Library Generation 2 and the Media Library Generation 3. To identify the library model, the Media Library Generation 2 is labeled “R200 BD” and the Media Library Generation 3 is labeled “A200 BDB” on the rear chassis. Regardless of which model you have, the racking installation instructions for front-facing chassis are the same. Figures in this chapter illustrate the Media Library Generation 3.

Getting Started

To get started:

1. Before beginning the rack installation procedure, decide where you want to install the Media Libraries in the rack.

Note: Due to the length of the connecting cables, you need to install the Archive Engine toward the middle of the rack, with the Media Libraries installed above and below the Archive Engine.

2. Remove all the components from the Media Library kit.

You will see a small, light gray latch on the inner surface of one rail.

3. Slide the gray latch until the two parts of the rail can be detached.
4. Separate the inner and outer rails.

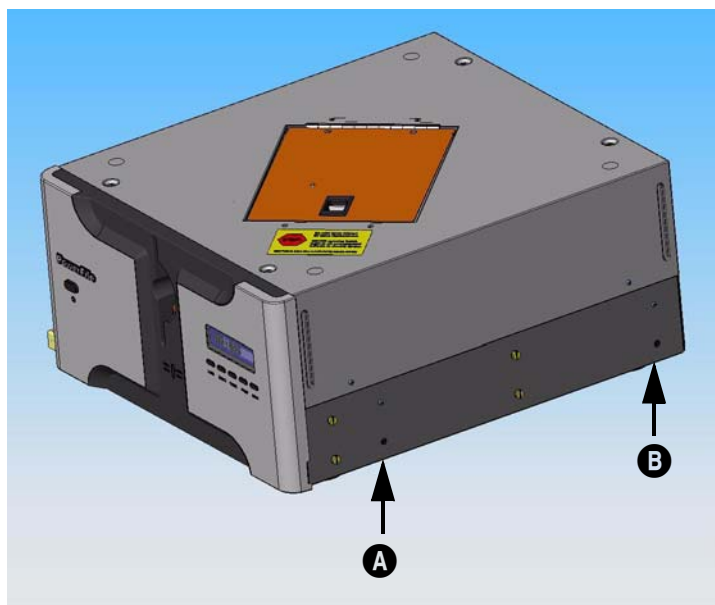
The rails must be separated before they can be attached to the Media Library.

Setting Up the Front-mounted Chassis

To set up the chassis:

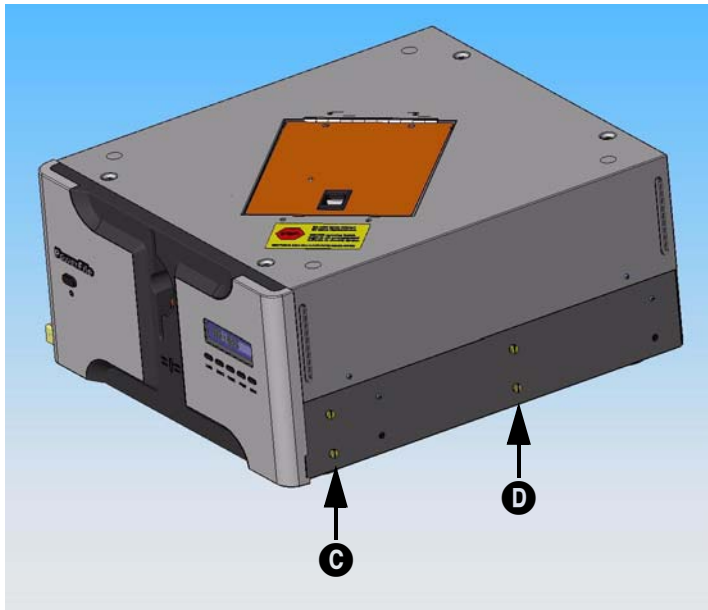
1. Remove the self-tapping screws **A** and **B** on the right and left side of the chassis.

Save the four screws. You'll need them in a later step.



Media Library Self-tapping Screws

2. Loosen the keyhole screws **C** and **D** on the right and left side of the chassis.



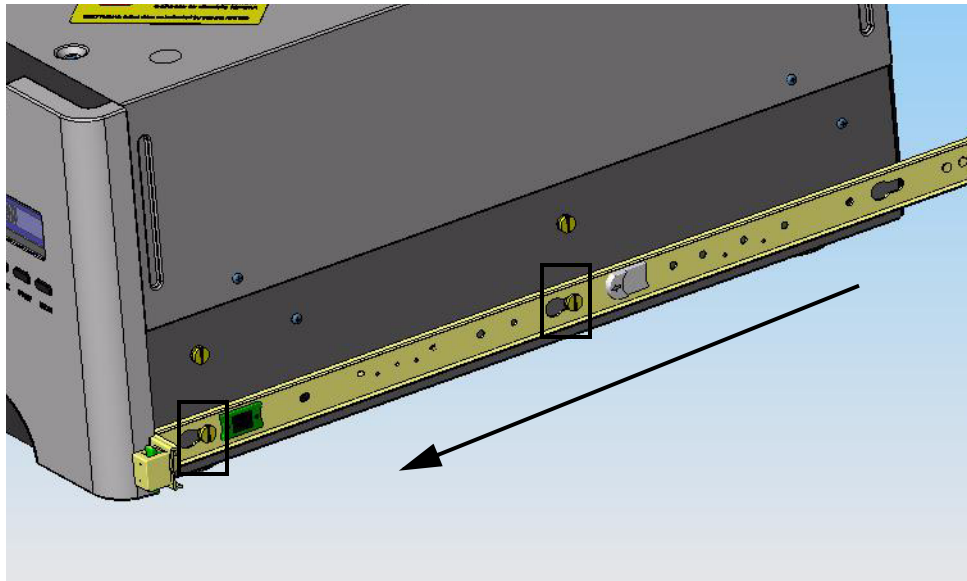
Media Library Keyhole Screws

The pre-installed keyhole screws must be loosened to allow proper mounting of the inner rails.

Installing the Inner Slide Rails on the Front Mounted Chassis

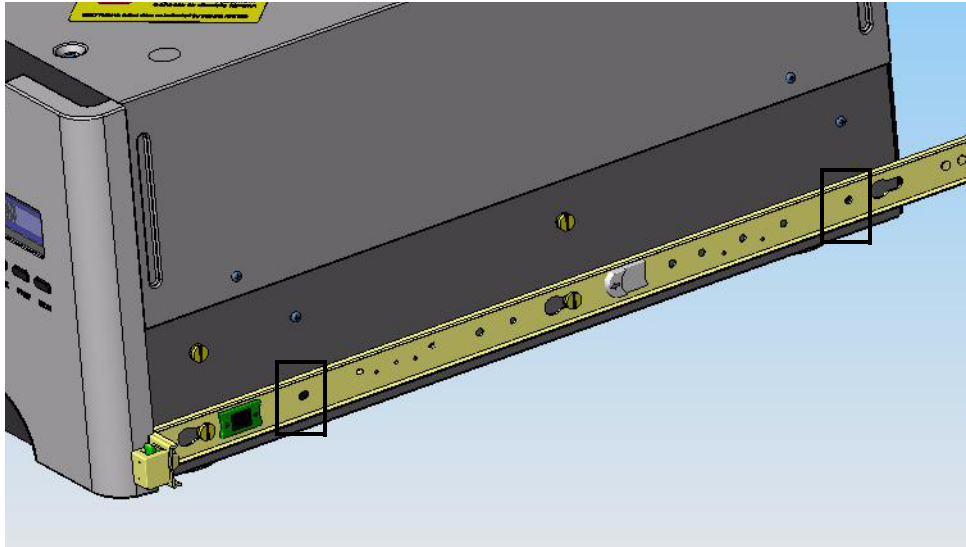
To install the inner slide rails:

1. Install the inner slide rails over the bottom keyhole screws in the direction indicated by the arrow. Repeat this step on the other side of the Media Library.



Media Library Inner Slide Rails and Keyhole Screws

2. Tighten the keyhole screws.
3. Fasten the inner slide rails to the Media Library using the four self-tapping screws you saved in [Step 1](#) on [page 24](#). Insert the two screws on each side of the Media Library.



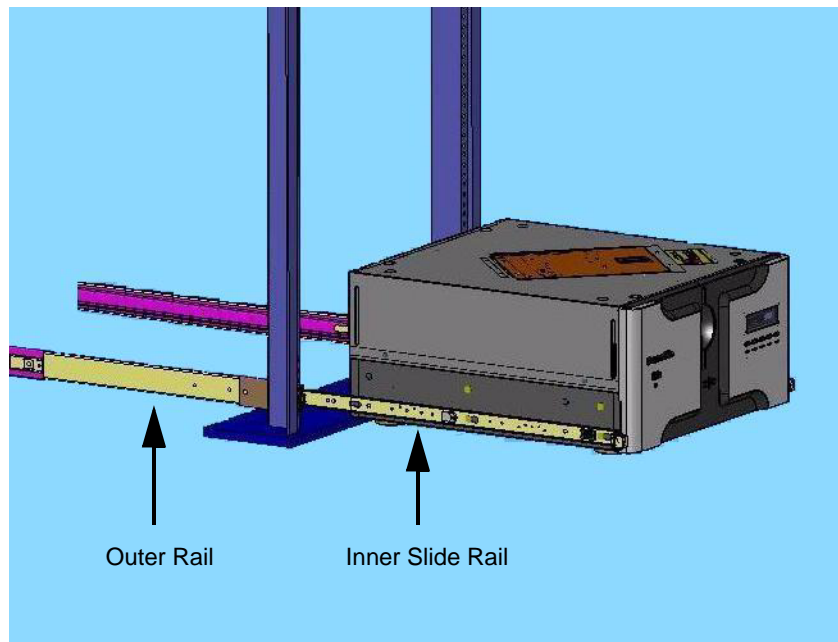
Media Library Inner Slide Rail and Self-tapping Screws

Installing the Outer Rails on the Front-mounted Chassis

The outer rails attach to the server rack and hold the server in place. The outer rails for the Media Library extend between 30 inches and 42 inches. No tools are required to attach the outer rails.

To install the outer rails:

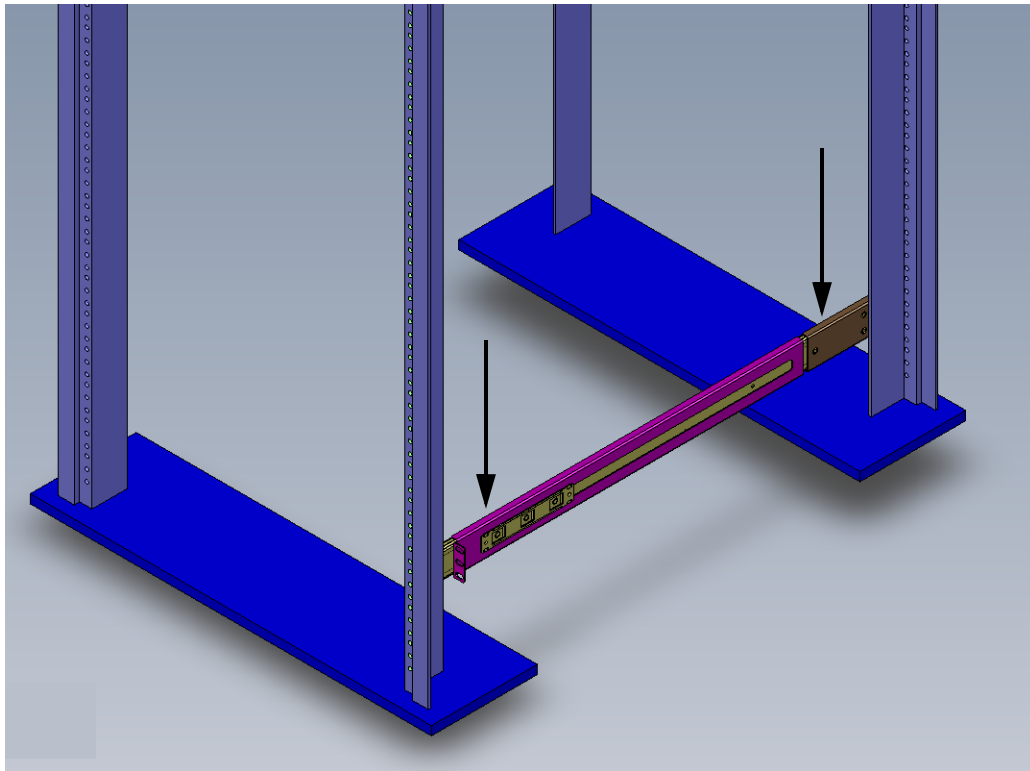
1. On the rack's rear vertical post, identify the RMU location where you want to attach the right outer rail. The right outer rail should be installed at the same level as the right inner slide rail on the chassis.



Media Library Inner Slide Rail on Front-mount Configuration

2. Adjust the rail to the proper distance so that it fits between the front and rear rack posts.
3. At the rear of the rack, position the rail so that one of the white mounting-bracket flanges rests against the inside of the rack post.

Refer to the following figure for the location of the white mounting-bracket flanges on the outer rail. There is one mounting-bracket flange on each end of the outer rail.



Mounting-bracket Flanges on Outer Rail

See the following figure for a close-up picture of the mounting-bracket flange.



Mounting-bracket Flange (Close Up)

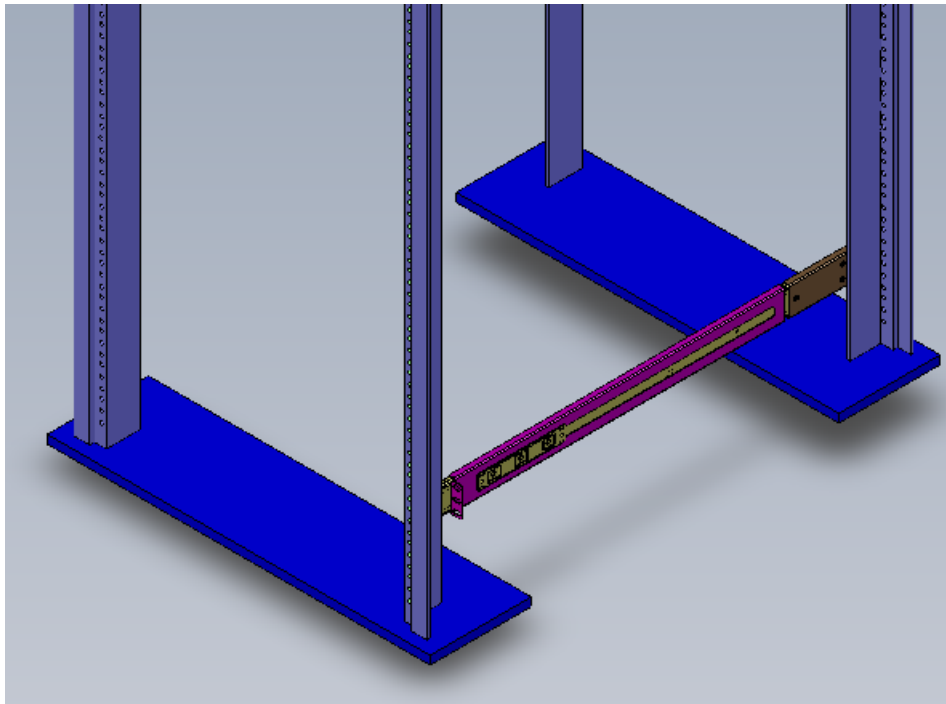
When attached, the prongs on the mounting-bracket flange wrap around the rail and insert in the screw holes to secure the rail in place.



Mounting-bracket Flange (Attached)

4. Line up the two pins to the appropriate RMU holes on the rack, and then gently push the rail into place. The mounting-bracket flange will lock automatically in the rack post.
5. On the rack's front vertical post, identify the RMU location where you want to attach the rail.
6. At the front of the rack, position the rail so that the second white mounting-bracket flange rests against the inside of the rack post.
7. Line up the two pins to the appropriate RMU holes on the rack and then gently push the rail into place. The mounting-bracket flange will lock automatically in the rack post.

When you are done attaching the rail, it should look similar to the following illustration.



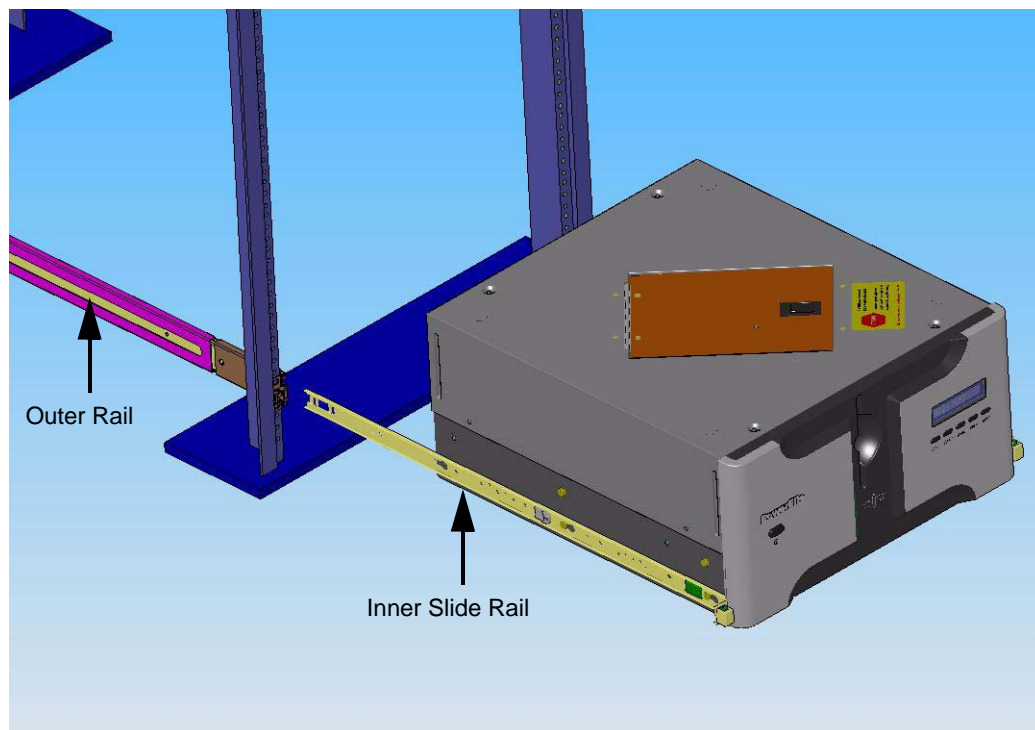
Outer Rail Installed in Rack

8. Repeat [Step 1](#) through [Step 7](#) for the left outer rail.
9. To install multiple chassis, repeat steps [Step 1](#) through [Step 8](#) for each front-facing chassis you plan to install in the rack. Make sure to leave enough vertical room between rail pairs to accommodate the height of a 5 RU media library.

Installing the Chassis in the Rack

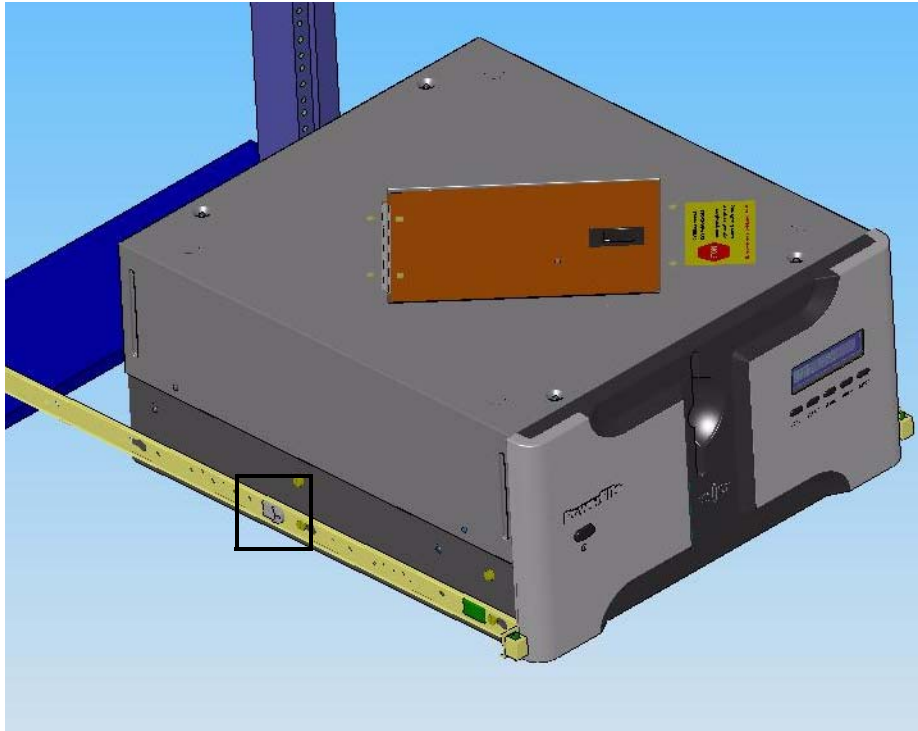
To install the chassis:

1. Confirm that the Media Library includes the inner slide rails and that the outer rails are attached to the rack.
2. Line up the chassis' inner rails with the front of the rack rails.



Media Library Aligned with Rack Rails

3. On the left outer rail, locate the rail latch. Push down on the rail latch.



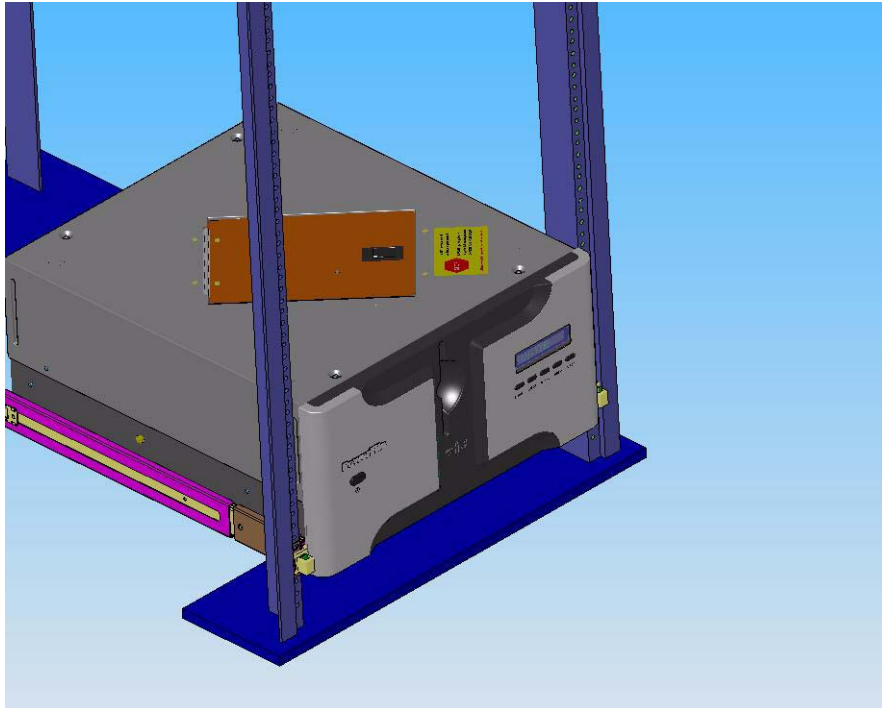
Media Library Rail Latch

Refer to the following illustration for a close up of the rail latch.



Media Library Rail Latch (Close Up)

4. Locate the rail latch on the right outer rail. Pull up on the rail latch.
5. Slide the Media Library rails into the rack rails, keeping the pressure even on both sides.
6. Push the Media Library until it is fully inserted into the rack and it locks into place. The Media Library should glide smoothly on the rails.



Media Library in Front-mount Configuration

Attaching the Media Library Feet

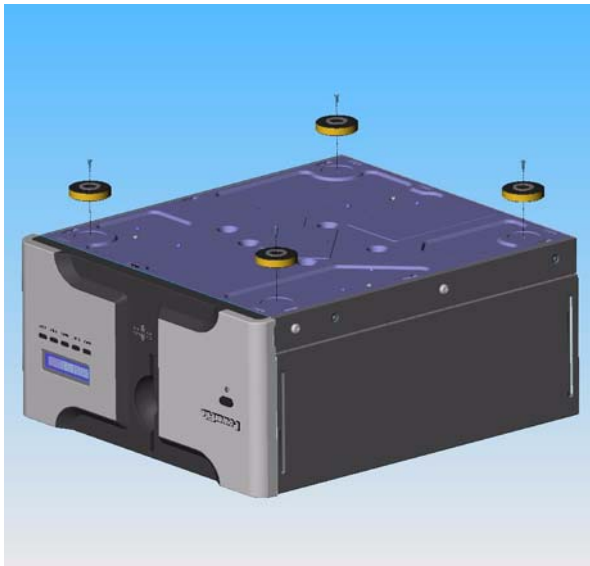
Some Media Library models are shipped with the feet already attached. Follow the steps below if your library does not have the feet attached and you wish to place the Media Library unit on a flat surface instead of installing it on a rack.

Your PowerFile Library Accessory Kit contains four (4) feet that can be attached to the bottom of the Media Library.

To attach the feet:

1. Detach the Media Library power cord from the power source.
2. Make sure there are absolutely no discs in the Media Library.
3. Place the Media Library upside down on a soft, flat surface that is smooth and clean.
4. Align the positioning nibs on each foot with the alignment holes in the Media Library base.

5. Use the supplied screws to attach the four feet to the Media Library base.



Media Library Feet

Note: *If you choose to attach the feet to the Media Library, you must attach all four feet.*

5

Installing the Media Library in a Back-to-Back Configuration

In This Chapter

- [Back-to-Back Configuration](#)
- [Getting Started](#)
- [Setting Up the Front-mounted Chassis](#)
- [Installing the Inner Slide Rails on the Front Mounted Chassis](#)
- [Setting Up the Rear-mounted Chassis](#)
- [Installing the Inner Slide Rails on the Rear-mounted Chassis](#)
- [Installing the Outer Rails on the Front-mounted Chassis](#)
- [Installing the Outer Rails on the Rear-mounted Chassis](#)
- [Installing the Chasses in the Rack](#)

This chapter provides instructions for mounting the Media Library Generation 3 in a back-to-back rack configuration. The Media Library Generation 3 is labeled “A200 BDB” on the rear of the chassis.

Back-to-Back Configuration

A back-to-back racking configuration is recommended for those sites that want to optimize system serviceability, rack density, and thermal management. An A3 back-to-back racking configuration supports seven front-facing Media Libraries, seven rear-facing Media Libraries, and two Archive Engines in an extended-depth 42U rack.

To use back-to-back racking, you need to:

- Install the chassis from the bottom of the rack first, filling the middle and upper sections of the rack as you add more components.

- Install the Archive Engines in the middle of the rack, between two or more Media Libraries. This accommodates the length of the cable connections to the Media Libraries. For example, one Archive Engine should face the back and the other should face the front.
- Install two inner rails on each Media Library; one on the right side and one on the left side of the chassis. Pre-installed keyhole screws are provided on the chassis at the required locations for the rail attachment.
- Install two outer rails facing the front of the rack, and two outer rails facing the rear of the rack to accommodate the front and rear Media Libraries, respectively.
- Ensure that the outer rails for the front and rear Media Libraries are at the same relative rack-mounted unit (RMU) position on the rack, while allowing ample room for stacking the chassis. This ensures that the Media Libraries are balanced and level with each other in the rack.

Rack Specifications

You must supply your own rack. The rack requirements are:

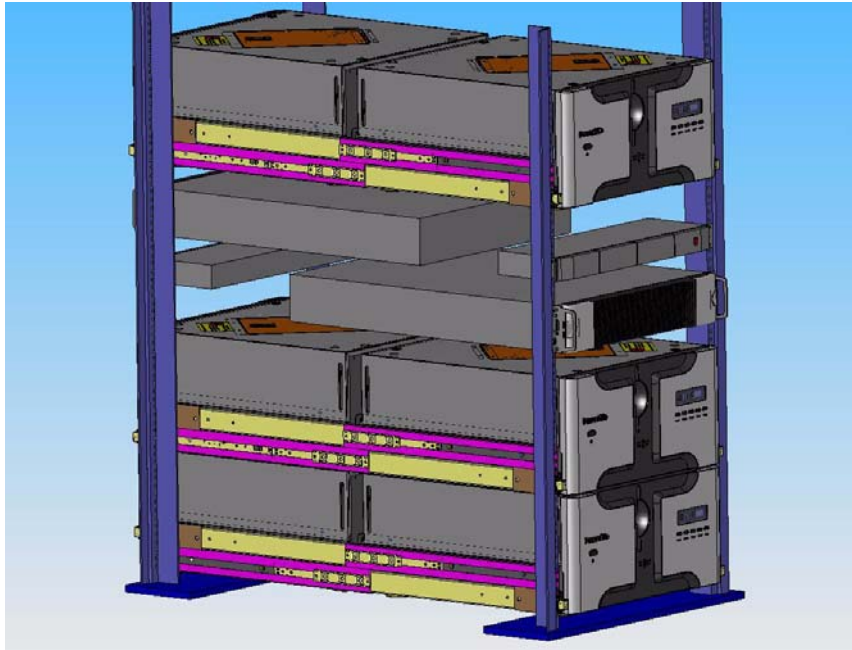
- Mount rails must be able to adjust to 40 inches between mounting surfaces
- 42U height minimum

Power Strip Requirements

You must supply your own power strip. The power strip requirements are:

- Must be rack-mountable in the rack (not on the side)
- Should be 1U–2U in height and be less than 10 inches in depth
- Input of 15–20 Amps and 10 feet (or more) power cord length
- Output of 9 or more AC connectors

The following figure shows an example of back-to-back racking with six Media Libraries, two Archive Engines, and two power strips.



Back-to-Back Configuration

Getting Started

To get started:

1. Before beginning the rack installation procedure, decide which Media Libraries will be installed front-facing in the rack, and which ones will be installed rear-facing in the rack.

Note: Be sure to take into consideration the installation of a 2RU Archive Engine in the middle of the rack, between two or more Media Libraries.

2. Remove all the components from the Media Library kit.
You will see a small, light gray latch on the inner surface of one rail.
3. Slide the gray latch until the two parts of the rail can be detached.
4. Separate the inner and outer rails.

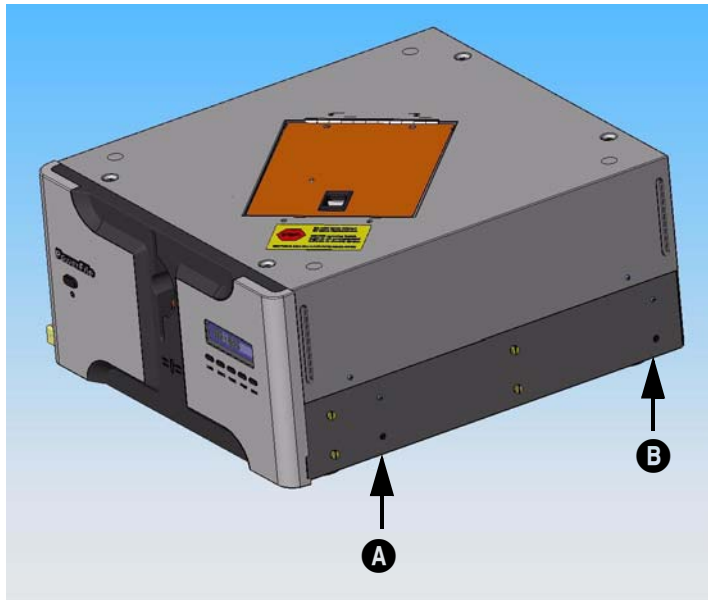
The rails must be separated before they can be attached to the Media Library.

Setting Up the Front-mounted Chassis

To set up the chassis:

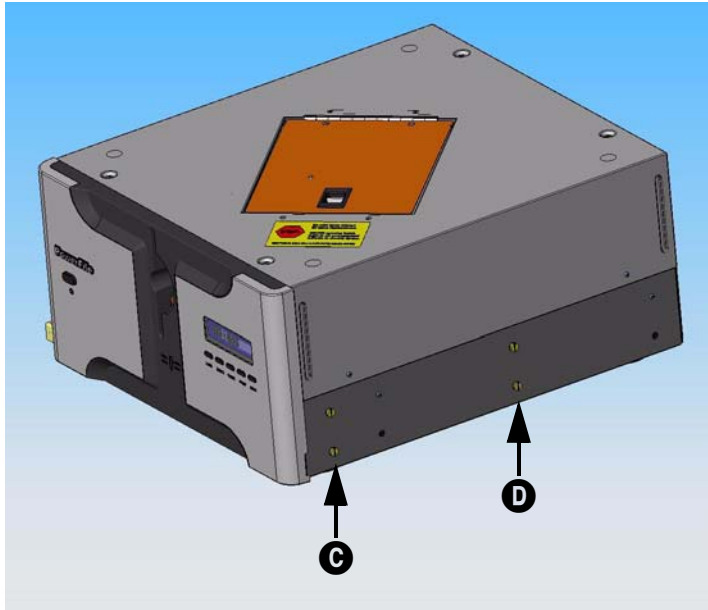
1. Remove the self-tapping screws **A** and **B** on the right and left side of the chassis.

Save the four screws. You'll need them in a later step.



Media Library Self-tapping Screws

2. Loosen the keyhole screws **C** and **D** on the right and left side of the chassis.



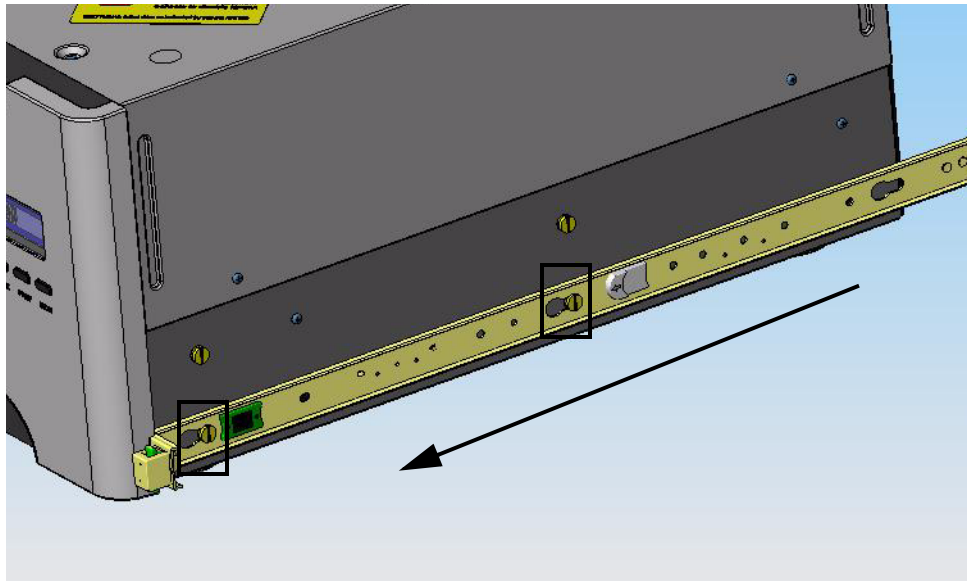
Media Library Keyhole Screws

The pre-installed keyhole screws must be loosened to allow proper mounting of the inner rails.

Installing the Inner Slide Rails on the Front Mounted Chassis

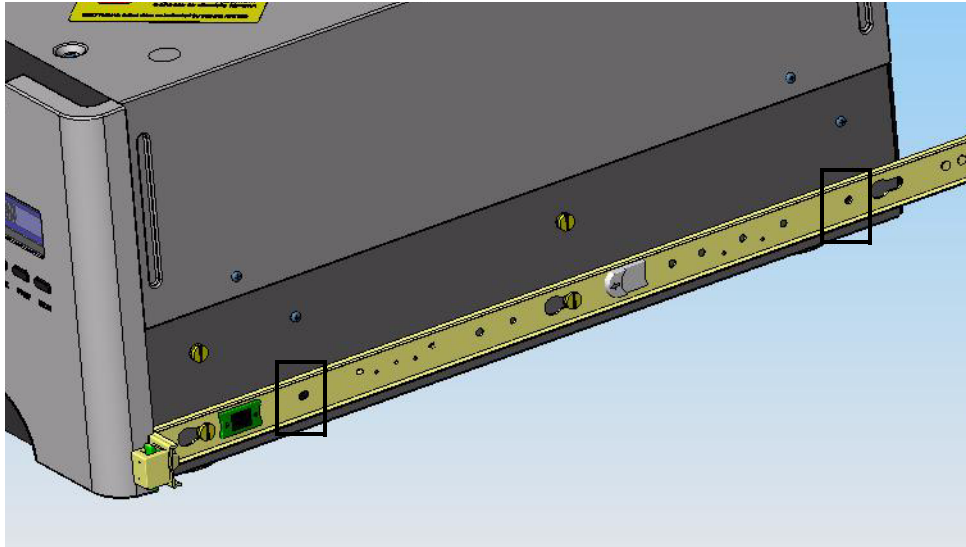
To install the inner slide rails:

1. Install the bottom inner slide rails over the keyhole screws in the direction indicated by the arrow. Repeat this step on the other side of the Media Library.



Media Library Inner Slide Rails and Keyhole Screws

2. Tighten the keyhole screws.
3. Fasten the inner slide rails to the Media Library using the four self-tapping screws you saved in [Step 1](#) on [page 38](#). Insert two screws on each side of the Media Library.



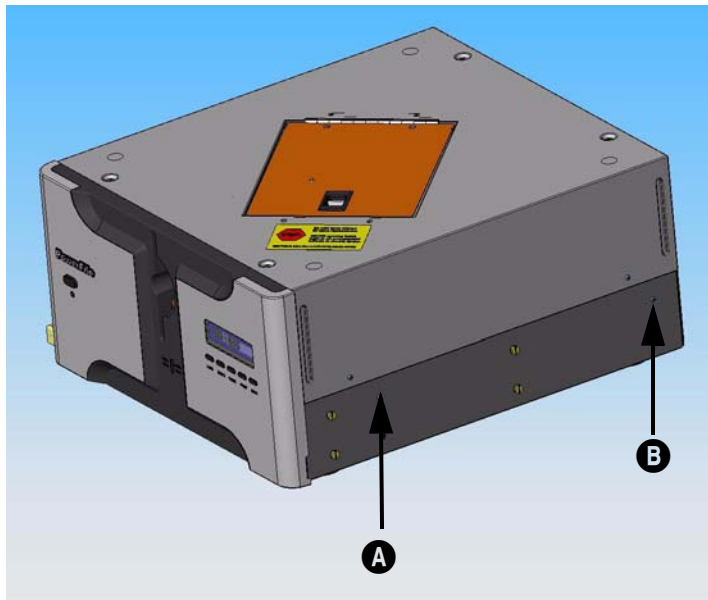
Media Library Inner Slide Rail and Self-tapping Screws

Setting Up the Rear-mounted Chassis

To set up the chassis:

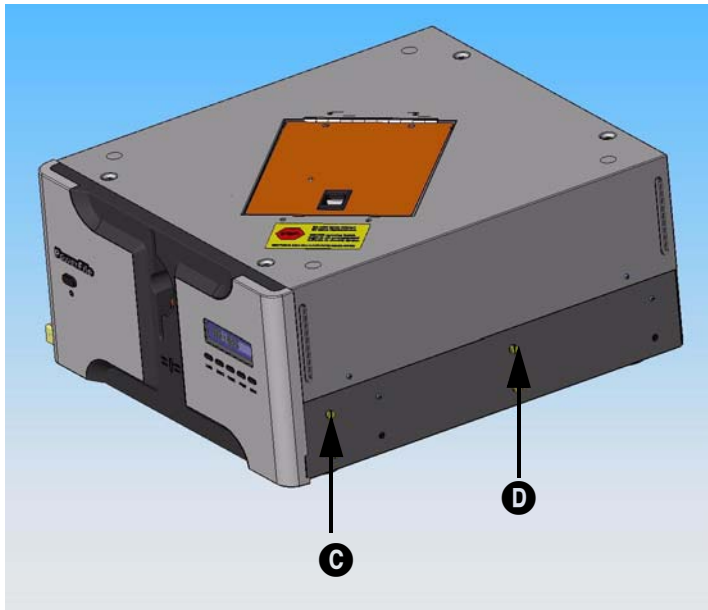
1. Remove the self-tapping screws **A** and **B** on the right and left side of the chassis.

Save the four screws. You'll need them in a later step.



Media Library Self-tapping Screws

2. Loosen the keyhole screws **C** and **D** on the right and left side of the chassis.



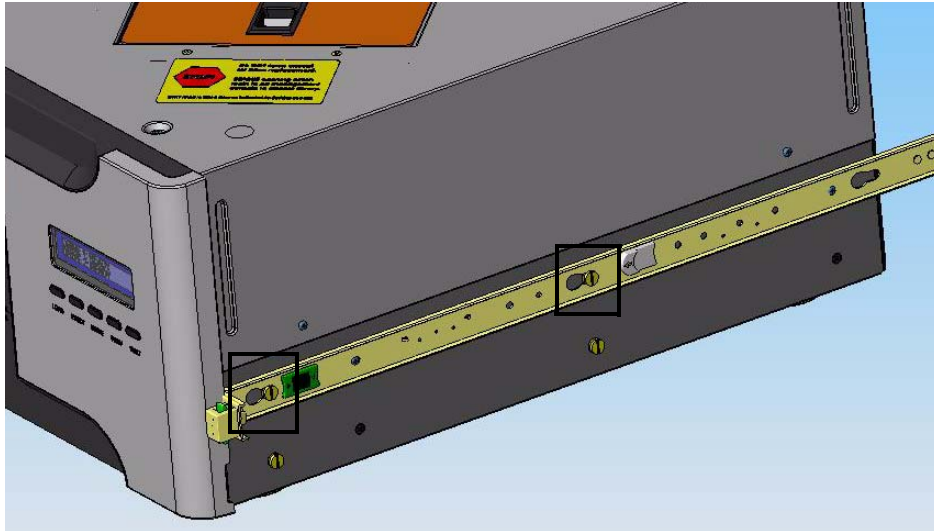
Media Library Keyhole Screws

The pre-installed keyhole screws must be loosened to allow proper mounting of the inner rails.

Installing the Inner Slide Rails on the Rear-mounted Chassis

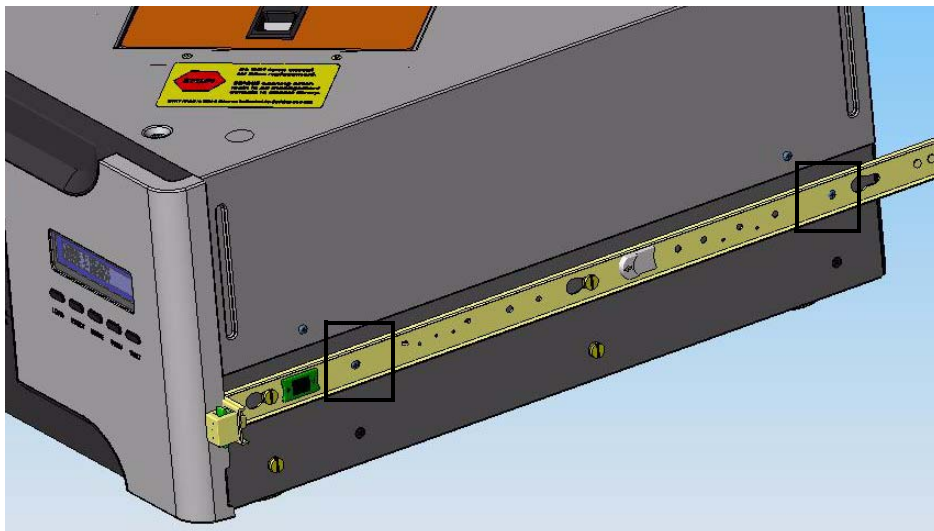
To install the inner slide rails:

1. Install the bottom inner slide rails over the keyhole screws in the direction indicated by the arrow. Repeat this step on the other side of the Media Library.



Media Library Inner Slide Rails and Keyhole Screws

2. Tighten the keyhole screws.
3. Fasten the inner slide rails to the Media Library using the two self-tapping screws you saved in [Step 1](#) on [page 41](#). Insert two screws on each side of the Media Library.



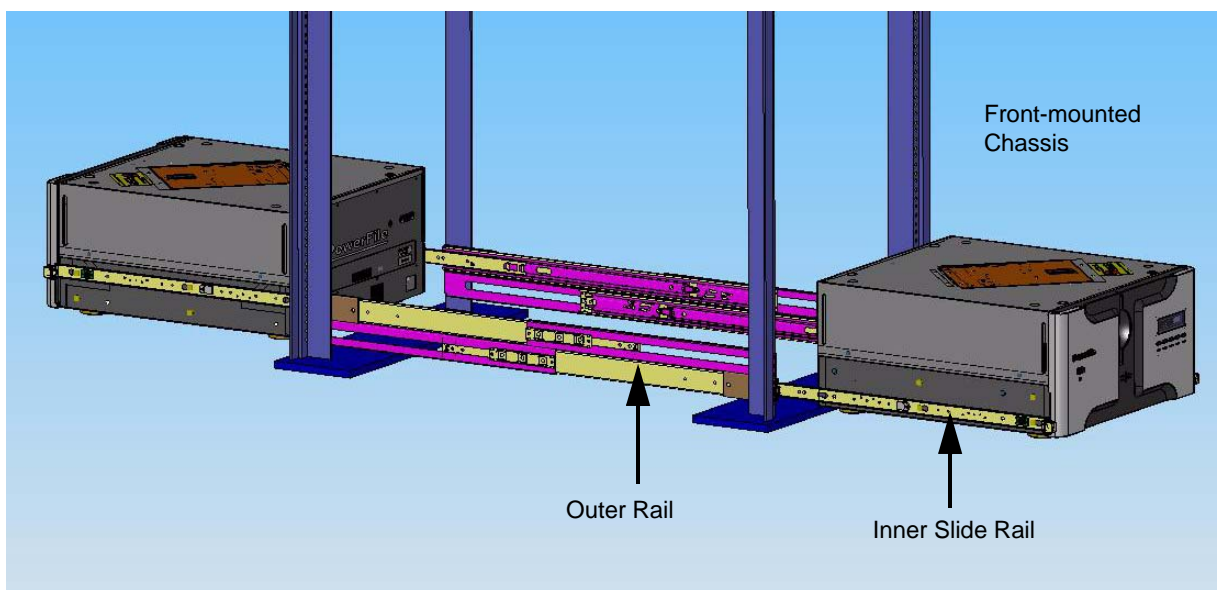
Media Library Inner Slide Rails and Self-tapping Screws

Installing the Outer Rails on the Front-mounted Chassis

The outer rails attach to the server rack and hold the server in place. The outer rails for the Media Library extend between 30 inches and 42 inches. No tools are required to attach the outer rails.

To attach the outer rails:

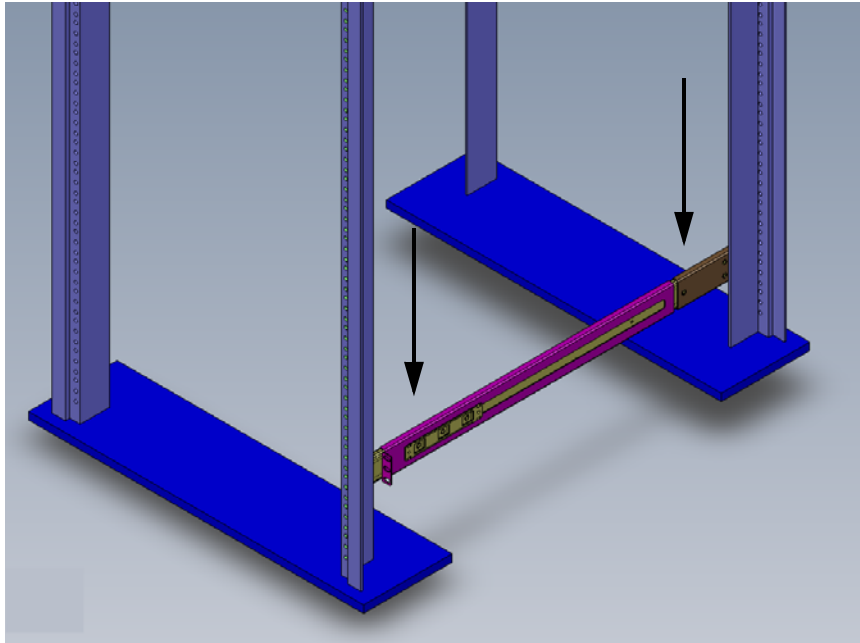
1. On the rack's rear vertical post, identify the RMU location where you want to attach the right outer rail. The right outer rail should be installed at the same level as the right inner slide rail on the chassis.



Media Library Inner Slide Rail and Outer Rail on Front-mount Configuration

2. Adjust the rail to the proper distance so that it fits between the front and rear rack posts.
3. At the rear of the rack, position the rail so that one of the white mounting-bracket flanges rests against the inside of the rack post.

Refer to the following illustration for the location of the white mounting-bracket flanges on the outer rail. There is one mounting-bracket flange on each end of the outer rail.



Mounting-bracket Flanges on Outer Rail

See the following figure for a close-up picture of the mounting-bracket flange.



Mounting-bracket Flange (Close Up)

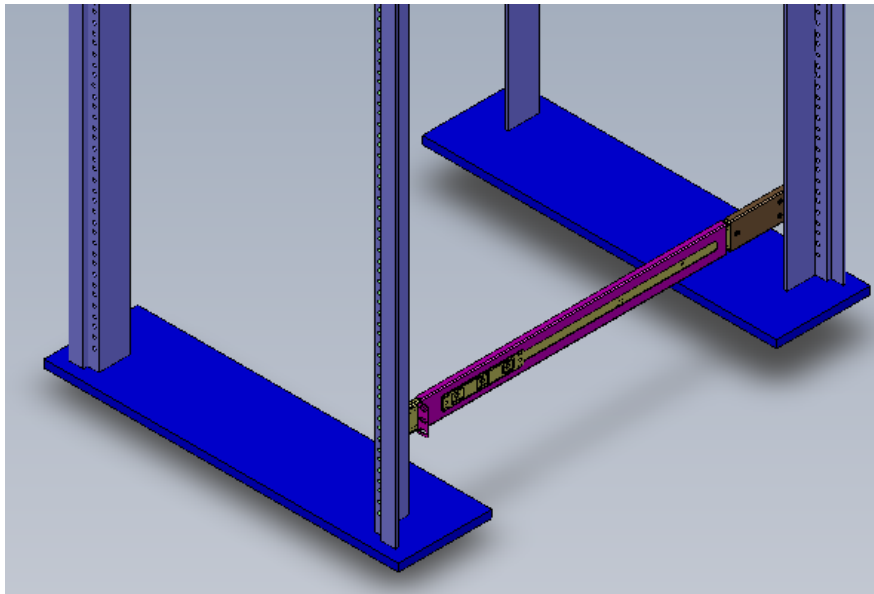
When attached, the prongs on the mounting-bracket flange wrap around the rail and insert in the screw holes to secure the rail in place.



Mounting-bracket Flange (Attached)

4. Line up the two pins to the appropriate RMU holes on the rack, and then gently push the rail into place. The mounting-bracket flange will lock automatically in the rack post.
5. On the rack's front vertical post, identify the RMU location where you want to attach the rail.
6. At the front of the rack, position the rail so that the second white mounting-bracket flange rests against the inside of the rack post.
7. Line up the two pins to the appropriate RMU holes on the rack and then gently push the rail into place. The mounting-bracket flange will lock automatically in the rack post.

When you are done attaching the rail, it should look similar to the following illustration.



Outer Rail Installed in Rack

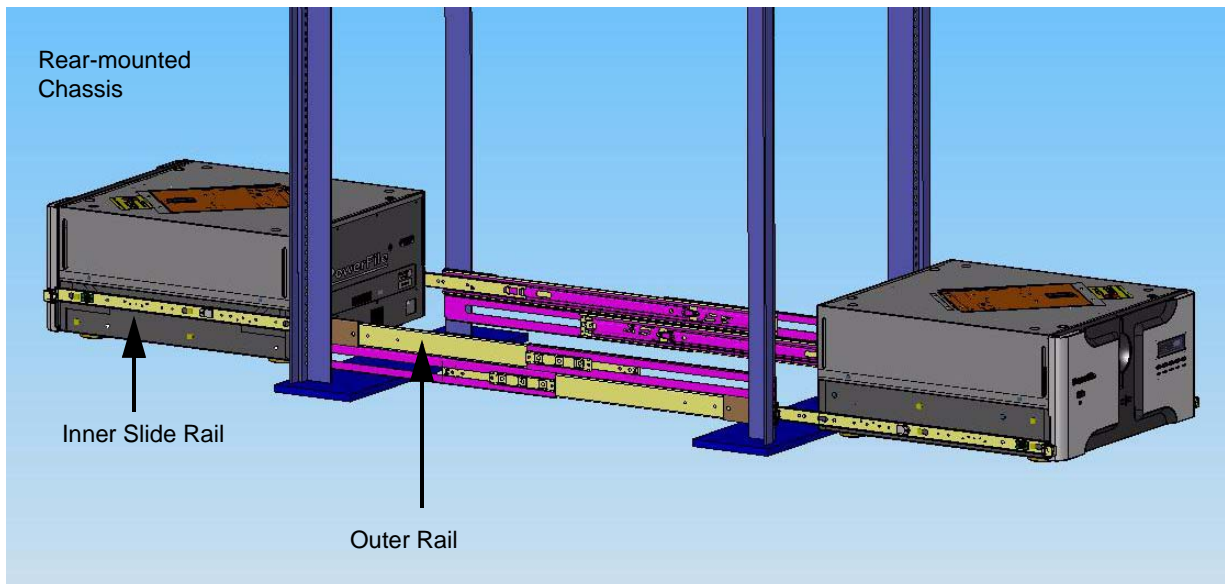
8. Repeat [Step 1](#) through [Step 7](#) for the left outer rail.
9. To install multiple chassis, repeat steps [Step 1](#) through [Step 8](#) for each front-facing chassis you plan to install in the rack. Make sure to leave enough room between the rails to accommodate the stacked 5 RU chassis.

Installing the Outer Rails on the Rear-mounted Chassis

The outer rails attach to the server rack and hold the server in place. The outer rails for the Media Library extend between 30 inches and 42 inches. No tools are required to attach the outer rails.

To install the outer rails:

1. On the rack's rear vertical post, identify the RMU location where you want to attach the right outer rail. The right outer rail should be installed at the same level as the right inner slide rail on the chassis.

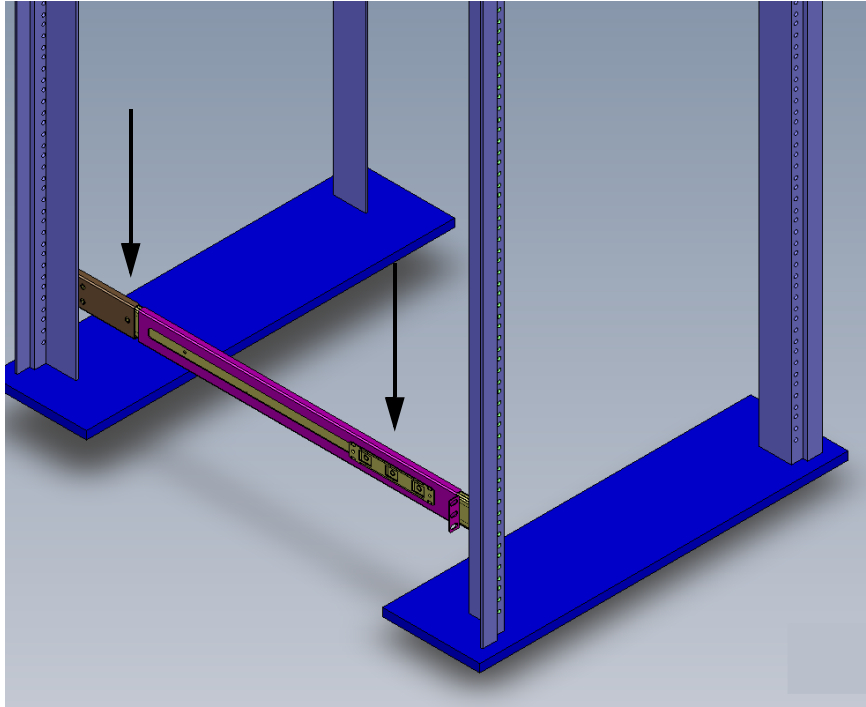


Media Library Inner Slide Rail and Outer Rail on Rear-mount Configuration

Note: The rear-facing rails fit directly above the front-facing outer rails.

2. Adjust the rail to the proper distance so that it fits between the front and rear rack posts.
3. At the rear of the rack, position the rail so that one of the white mounting-bracket flanges rests against the inside of the rack post.

Refer to the following illustration for the location of the white mounting-bracket flanges on the outer rail. There is one mounting-bracket flange on each end of the outer rail.



Mounting-bracket Flanges on Outer Rail

See the following figure for a close-up picture of the mounting-bracket flange.



Mounting-bracket Flange (Close Up)

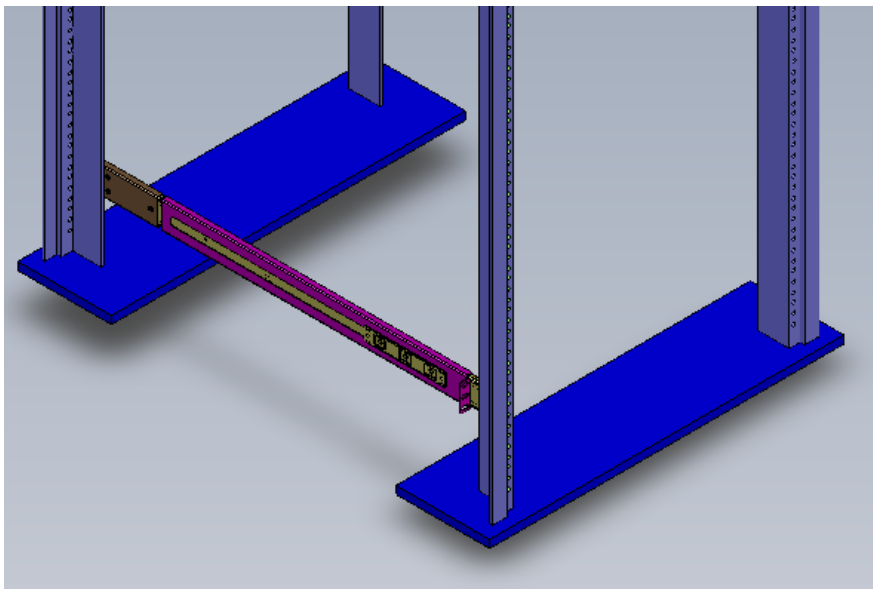
When attached, the prongs on the mounting-bracket flange wrap around the rail and insert in the screw holes to secure the rail in place.



Mounting-bracket Flange (Attached)

4. Line up the two pins to the appropriate RMU holes on the rack, and then gently push the rail into place. The mounting-bracket flange will lock automatically in the rack post.
5. On the rack's front vertical post, identify the RMU location where you want to attach the rail.
6. At the front of the rack, position the rail so that the second white mounting-bracket flange rests against the inside of the rack post.
7. Line up the two pins to the appropriate RMU holes on the rack and then gently push the rail into place. The mounting-bracket flange will lock automatically in the rack post.

When you are done attaching the rail, it should look similar to the following illustration.



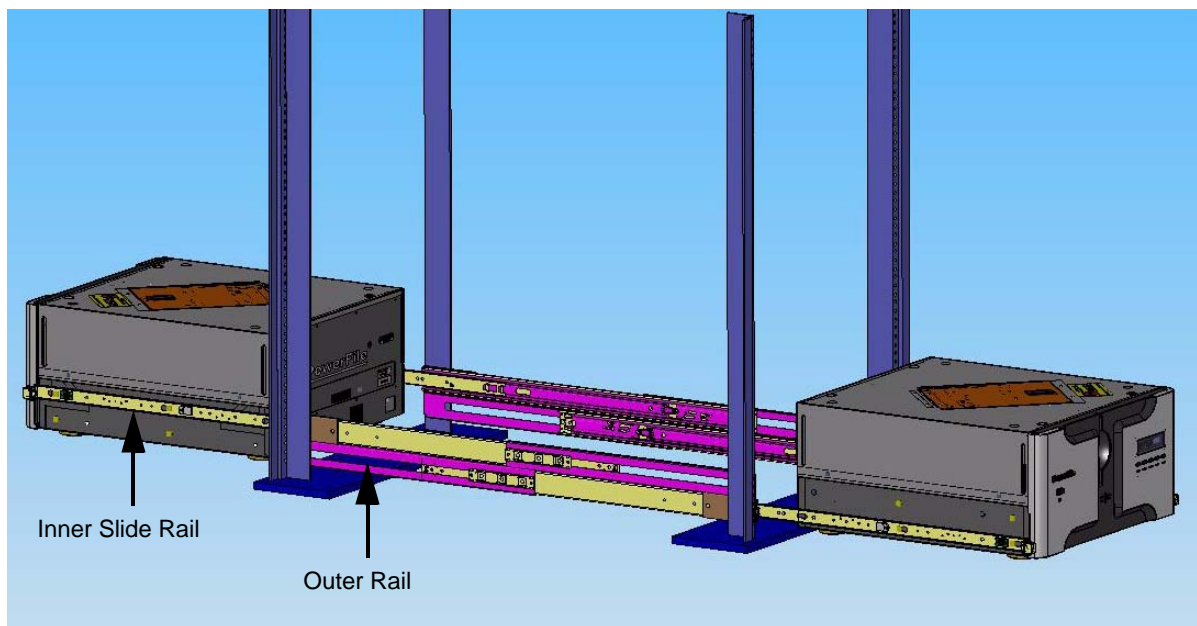
Outer Rail Installed in Rack

8. Repeat [Step 1](#) through [Step 7](#) for the left outer rail.
9. To install multiple chasses, repeat steps [Step 1](#) through [Step 8](#) for each front-facing chassis you plan to install in the rack. Make sure to leave enough room between the rails to accommodate the stacked 5 RU chasses.

Installing the Chasses in the Rack

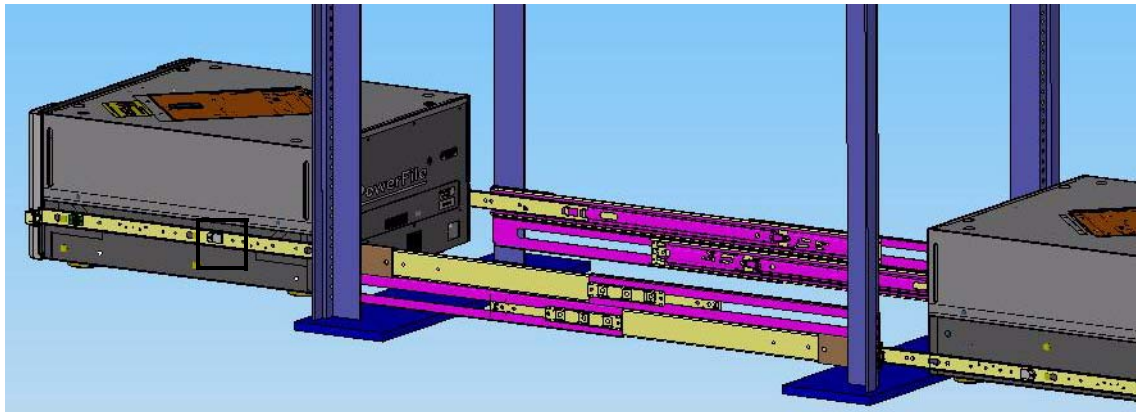
To install the chasses:

1. Confirm that the Media Library includes the inner slide rails and that the outer rails are attached to the rack.
2. Line up the chassis inner rails with the front of the rack rails.



Media Library Aligned with Rack Rails

3. Locate the rail latch on the outer left rail. Push down on the rail latch.



Media Library Rail Latch

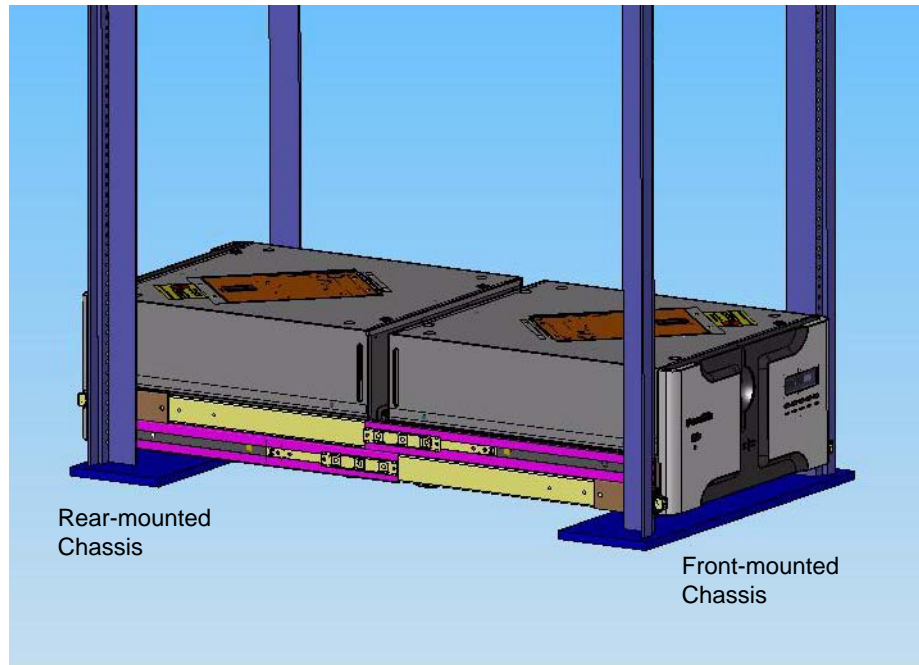
Refer to the following illustration for a close up of the rail latch.



Media Library Rail Latch (Close Up)

4. Locate the rail latch on the right outer rail. Pull up on the rail latch.
5. Slide the Media Library rails into the rack rails, keeping the pressure even on both sides.

6. Push the Media Library until it is fully inserted into the rack and it locks into place. The Media Library should glide smoothly on the rails.



Media Libraries in Back-to-Back Configuration

6

Installing the Cache Expansion Unit

In This Chapter

- [Identifying the Rail Kit Components](#)
- [Before You Begin](#)
- [Attaching the Mounting Brackets and Rails](#)
- [Front Panel HDDs and LEDs](#)

This chapter provides instructions for installing the Cache Expansion Unit in the rack. Up to two Cache Expansion Units can be installed per one Archive Engine.

Note: *The following installation procedures apply to standard Electronics Industries Association (EIA) racks. Non-EIA racks may not be able to support the Cache Expansion Unit. If you are using a non-EIA rack, PowerFile recommends that you secure the Cache Expansion Unit using slide rails, which are available from PowerFile Authorized Resellers.*

Identifying the Rail Kit Components

The Cache Expansion Unit package includes two fixed rails, two rear-mounting brackets, and a set of screws. If your rack requires cage nuts, you'll need to provide these yourself.

Table 6-1 Cache Expansion Unit Rail Kit Hardware

Hardware	Name	Quantity	Use
	Phillips Pan Head Screw	8	Attaching rear mounting brackets to rear rack posts.
	Phillips Flat Head Screw	10	Attaching rails to chassis.
	Rear Mounting Brackets	2	Attaching brackets to rails.
	Fixed Rails	2	Attaching rails to Cache Expansion Unit.

Before You Begin

Do not install the 12 1-TB HDD into the Cache Expansion Unit before installing the chassis in the rack. You will install the hard disk drives into the chassis after it is installed in the rack.

Attaching the Mounting Brackets and Rails

To attach the mounting brackets and rails:

1. Attach each rear mounting bracket to a rear rack post using two of the provided pan head screws. The side of the bracket with the long slot should be oriented inward. You will need to provide your own cage nuts.



Mounting Bracket Attached to Fixed Rail

2. Attach the rails to the chassis.

Both a left rail and a right rail attach to the chassis. When attached, the longest side of the rail is positioned at the bottom of the chassis and the side of the rail with beveled screw holes is facing out. Use four or five of the black, flat head screws to attach each rail to the chassis. Attach the rails to the chassis in such a way that the front of the Cache Expansion Unit can attach to the front posts of the rack, and the tab portion of the rails slides into the rear mounting brackets.

3. Slide the rails into the rear mounting brackets that are attached to the rear rack posts.
4. Use the remaining four pan head screws to attach the front of the chassis to the front rack posts. You will need to provide your own cage nuts.
5. After ensuring that the chassis is securely attached to the rack, insert each of the 12 hard disk drives.

Front Panel HDDs and LEDs

The HDD bays are identified from top to bottom and then left to right (from enclosure front side) as #1 to #12.



HDD Bays and LEDs

Table 6-2 describes these LEDs.

Table 6-2 Front Panel LEDs

Component	LED
System Power (PWR)	<ul style="list-style-type: none">Blue LED On: System powered on.Blue LED Off: System has no power.
System Status (FAIL)	<ul style="list-style-type: none">Red LED On: System has a fault. Fault can result from a fan failure, power failure, I/O module failure, or the system over-heating.Red LED Off: System normal.

7

Setting Up the A3 System

In This Chapter

- [Connecting the Archive Engine and Media Libraries](#)
- [Connecting Cache Expansion Arrays](#)
- [Powering On the A3 System](#)
- [Loading Qualification Media in Media Library \(Generation 3\)](#)
- [Powering Off the A3 System](#)

This chapter provides instructions for setting up the A3 system after all components have been mounted in the rack. The hardware components of an A3 system can consist of the Archive Engine, one or more Media Libraries, and up to two Cache Expansion Arrays (optional). Follow the procedures in this chapter for your A3 system configuration.

Connecting the Archive Engine and Media Libraries

The Archive Engine is provided with the following connections:

- Two Gigabit Ethernet ports that can connect to 10BaseT, 100BaseT, or 1000BaseT networks.
- Two PS2 ports and one VGA port for attaching keyboard, mouse, and monitor.

Note: *You are not required to connect a keyboard, mouse, and monitor since the A3 can be administered remotely through the A3 Management Console.*

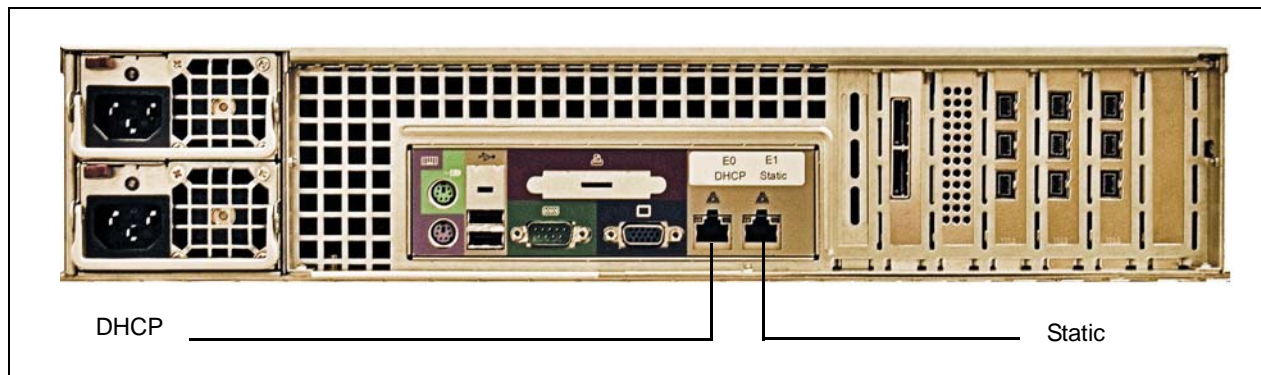
- One serial port reserved for diagnostic use by authorized service personnel.
- Two USB ports.
- Nine FireWire ports.

The following steps require the use of cables and connectors that have been supplied as part of the PowerFile Archive Engine or Media Library package.

To connect the Archive Engine and Media Libraries:

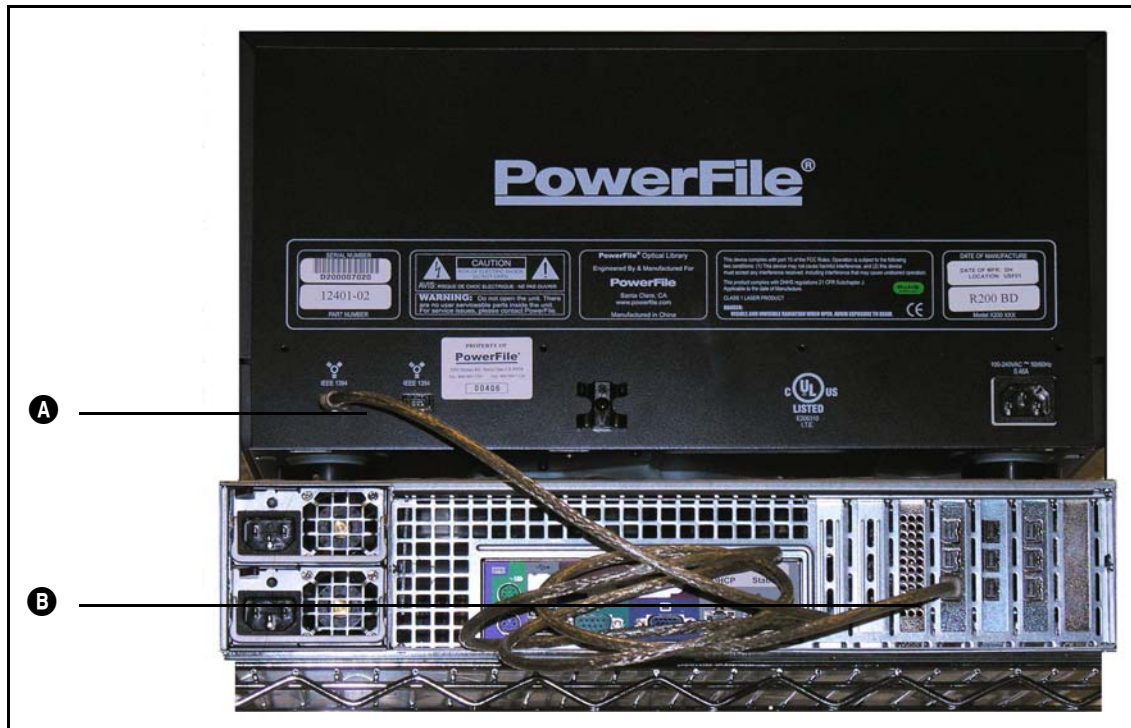
1. Use an Ethernet cable to connect the Archive Engine to the network. There are two ports on the back of the unit. Only one of the ports should be connected to the network for initial setup.

If you will be using DHCP to obtain an IP address for the Archive Engine, connect the port labeled *DHCP* to the network. Otherwise, connect the port labeled *static* to the network.



Archive Engine Ethernet Jack Connections

2. Use the provided FireWire cable to connect **A** on the Media Library to **B** on the Archive Engine. This connection can use any available FireWire port on the chassis.



Archive Engine and Media Library Connections

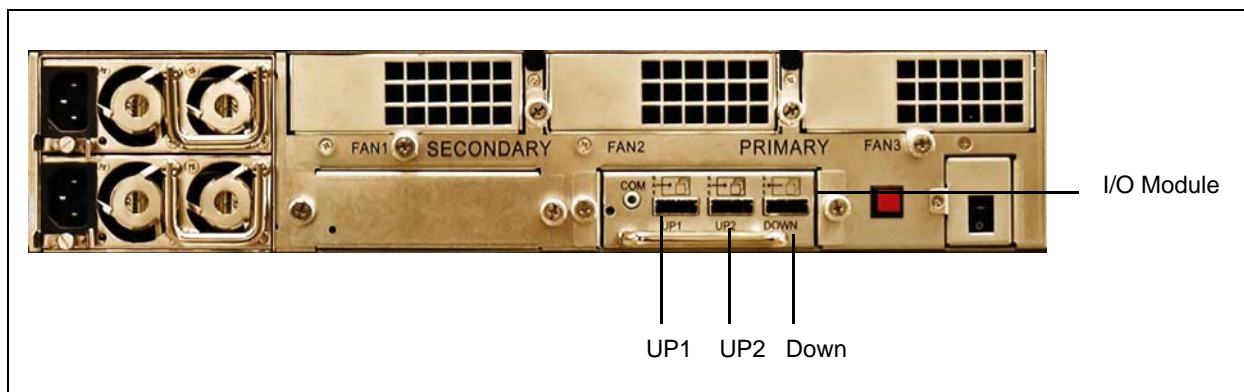
- If more than one Media Library is installed at your site, it is recommended that you distribute the Media Libraries among the FireWire cards. For example, given four libraries, plug one library into each card before you start doubling up.
 - If using a back-to-back configuration, connect all front-facing Media Libraries to the front-facing Archive Engine. Similarly, connect all rear-facing Media Libraries to the rear-facing Archive Engine.
 - Daisy chaining of Media Libraries is not supported.
3. Use the provided power cords to connect the Archive Engine to a UPS or properly grounded electrical outlet.
 4. Connect the Media Libraries to a Universal Power Supply (UPS) or properly grounded electrical outlet.

WARNING: DO NOT use a UPS with automatic shutdown or so called smart features. The PowerFile system does not support these features. Use a simple UPS to protect your system from power blackouts and brownouts.

Connecting Cache Expansion Arrays

Up to two Cache Expansion Arrays can be connected to one Archive Engine. You use the RAID controller cables supplied with the Cache Expansion Array to connect the I/O module on the Cache Expansion Array to the RAID controller on the Archive Engine. All connections are made to the back of the chassis.

The following illustration shows the Cache Expansion Array connectors on the I/O module.

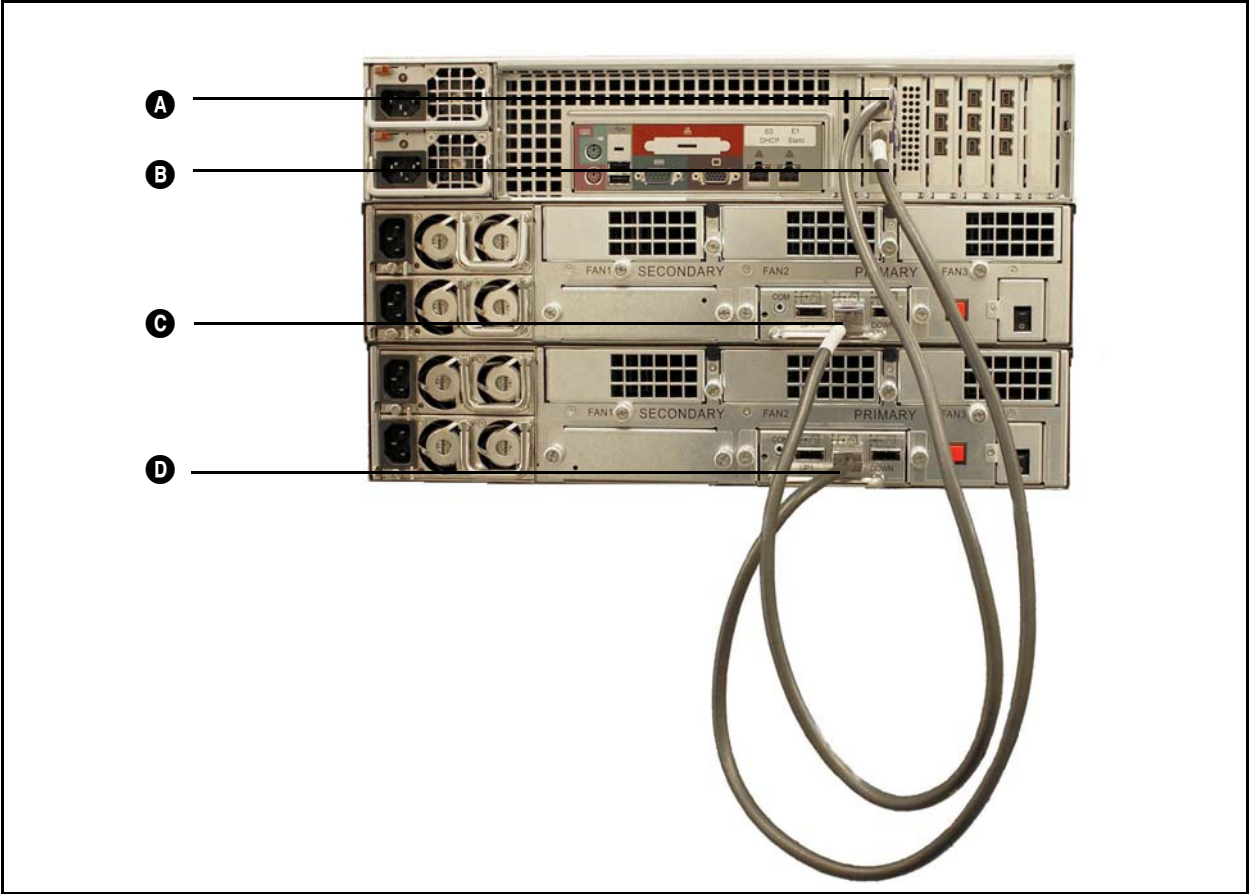


Cache Expansion Array Connectors

Connecting Two Cache Expansion Arrays to an Archive Engine

To connect two Cache Expansion Arrays to an Archive Engine:

1. Connect **A** on the RAID Controller card of the Archive Engine to **C** (UP2) on the I/O module of the top Cache Expansion Array.
2. Connect **B** on the RAID Controller card of the Archive Engine to **D** (UP2) on the I/O module of the bottom Cache Expansion Array.

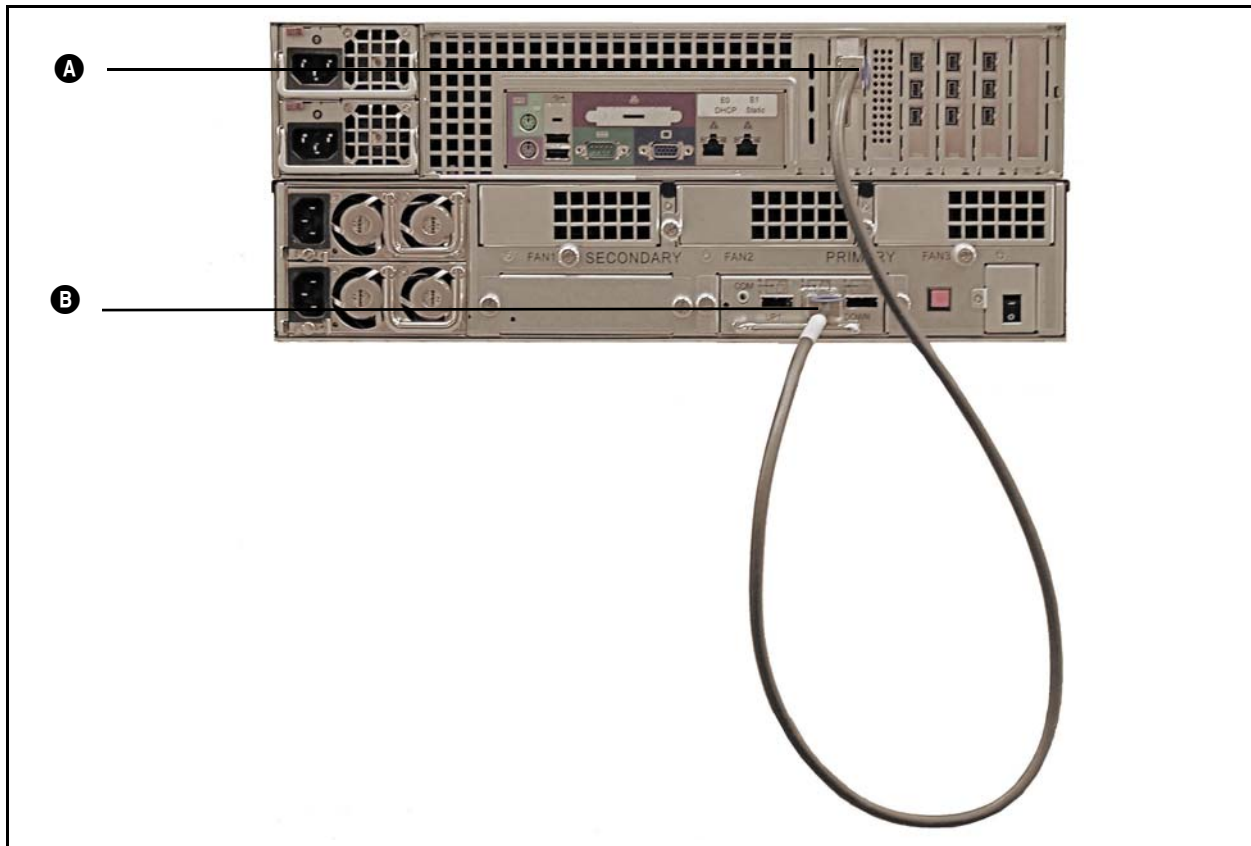


Two Cache Expansion Arrays and Archive Engine Connections

Connecting One Cache Expansion Array to an Archive Engine

To connect one Cache Expansion Array to an Archive Engine:

1. Connect **A** on the RAID Controller card of the Archive Engine to **B** (UP2) on the I/O module of the Cache Expansion Array.



One Cache Expansion Array and Archive Engine Connections

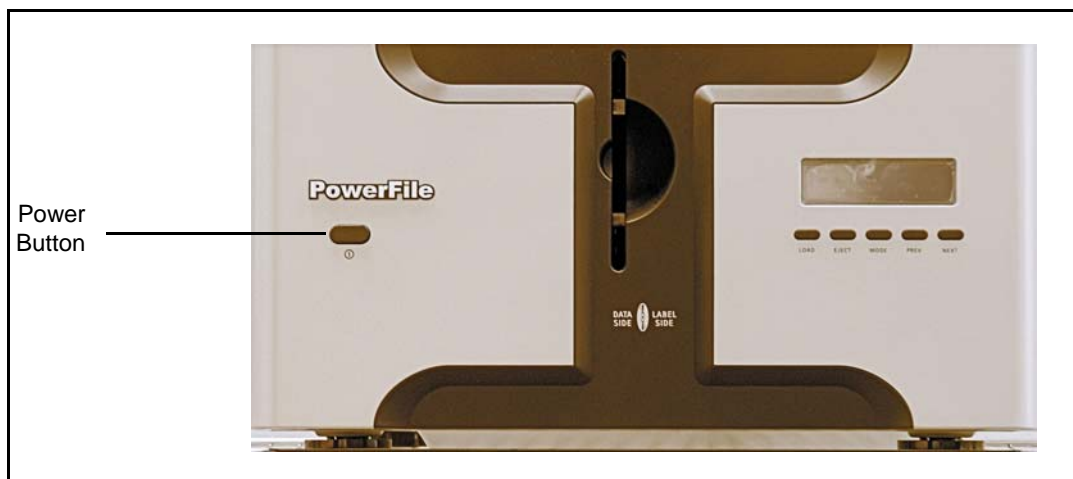
Powering On the A3 System

The individual components of the A3 System should be powered on in the following order:

- Power on all Media Libraries
- Power on all Cache Expansion Arrays
- Power on the Archive Engine

Powering On the Media Library

To ensure proper initialization, always power on the Media Libraries prior to powering on the Archive Engine. To power on a library, press the power button located on the lower left front corner of the library. To power off the library, press the power button again.



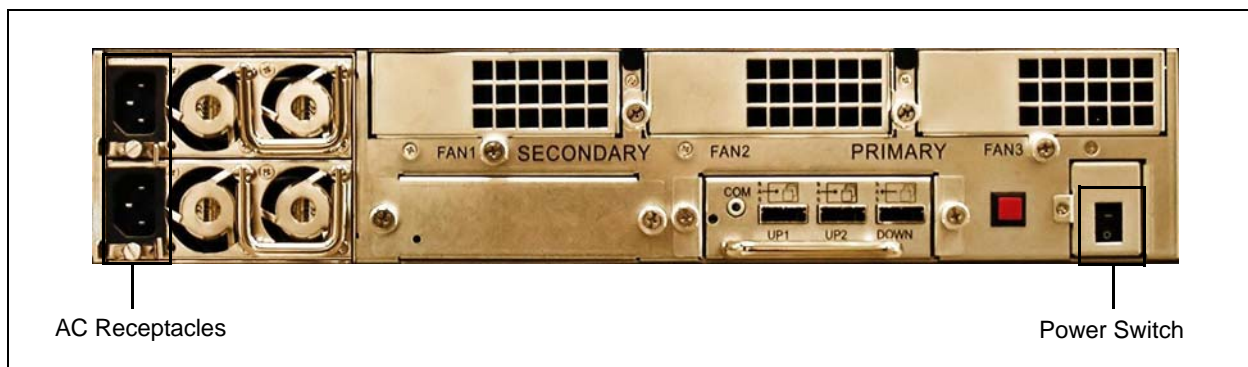
Media Library Power Button

Powering On the Cache Expansion Array

If you have installed one or more optional Cache Expansion Arrays, you need to connect it to a power source and switch the system on before starting the Archive Engine.

There are two power supplies in the Cache Expansion Array. It is important to connect both AC receptacles on the power supplies. It is recommended that each of the power supplies be attached to a separate UPS with built in surge protection and line conditioning.

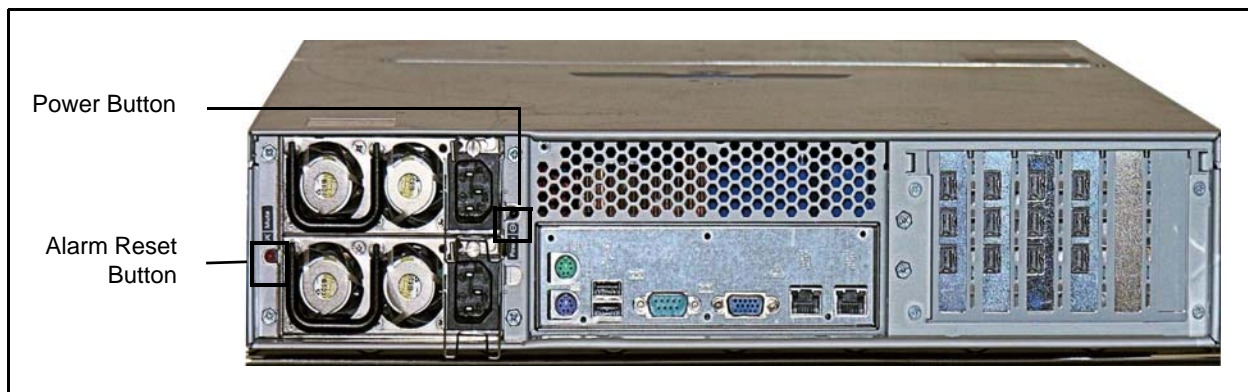
Power on the Cache Expansion Array(s) by pressing the black power switch on the back of the chassis.



Cache Expansion Array Power Connectors

Powering On the Archive Engine (Generation 1)

Once the Media Libraries are powered on, and the LCDs display a message similar to “PowerFile Archive Library,” power on the Archive Engine (Generation 1) by pressing the power button located on the back of the chassis. It will take the Archive Engine 3-5 minutes to discover and initialize all external devices.



Archive Engine (Generation 1) Power Button and Alarm Button

There are two power supplies in the Archive Engine. It is important to connect both power supplies. It is recommended that each of the power supplies be attached to a separate UPS with built in surge protection and line conditioning.

In the event that one of the internal power supplies is accidentally disconnected, an alarm will sound. The alarm reset button will stop the alarm from sounding once you have reconnected the internal power supply. If an intermittent beeping continues, you may have to power down the system and power it up again in the correct sequence. You must unplug the system before servicing.

Powering On the Archive Engine (Generation 2)

Once the Media Libraries and optional Cache Expansion Arrays are powered on, and the Media Library LCDs display a message similar to “PowerFile Archive Library,” power on the Archive Engine (Generation 2) by pressing the power button located on the front of the chassis. It will take the Archive Engine 3-5 minutes to discover and initialize all external devices.



Archive Engine (Generation 2) Power Button

The power button is used to apply or remove power from the power supply to the server system. Turning off system power with this button removes the main power, but keeps standby power supplied to the system. You must unplug the system before servicing.

There are two power supplies in the Archive Engine. It is important to connect both power supplies. It is recommended that each of the power supplies be attached to a separate UPS with built in surge protection and line conditioning.

Loading Qualification Media in Media Library (Generation 3)

Media Library Generation 3 systems include 2 pieces of Qualification Media per library. Before actively using the library, you must import the Qualification Media discs into each library. You can do this after configuring the Archive Engine server and Media Libraries.

For information on importing media, refer to the section, “Importing Permanent Storage Spaces,” in the *A3 Administrator’s Guide*.

Powering Off the A3 System

The individual components of the A3 System should be powered off in the following order:

- Power off the Archive Engine
- Power off all Cache Expansion Arrays
- Power off all Media Libraries

Refer to [“Powering On the A3 System” on page 7–63](#) for the location of the power buttons on these components.

Contacting PowerFile

If you have specific comments or questions about PowerFile solutions that have not been addressed in this document, please check our FAQ or fill out our Information Form. This will help us to learn a little about you, and will give you an opportunity to send us your comments and questions.

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